ANDREWS ENVIRONMENTAL ENGINEERING INC.
5987 East 71st Street, Suite 207, Indianapolis, Indiana 46220 (317) 595-6492 Fax (317) 598-9929

February 19, 1999

Mr. Donald Sutton, P.E.
Manager, Air Permit Section
Illinois Environment Protection Agency
Division of Air Pollution Control
2200 Churchill Road
P.O. Box 19506
Springfield, Illinois 62794-9506

Subject: Administrative Application for CAAPP Part 70 Permit
Permit ID Nos.: 201801AAF & 201808ADB
IEPA Site Number: 2018080001
Pagel Landfill

Dear Sir:

Enclosed, please find a Part 70 permit application for Winnebago Reclamation Services, Inc. (WRS) - Pagel Landfill. This application is submitted consistent with our January 28, 1999 meeting, pursuant to 40 CFR 60, Subpart WWW—*Standards of Performance for Municipal Solid Waste Landfills (NSPS).* This application is to initiate the Part 70 permitting process. In addition, future amendments may be necessary to include an updated Continuous Joint Construction And Operating Permit, including documents such as the *NSPS Gas Control System Design Plan* and *Title V Compliance Monitoring and Response Plan.* Our schedule is for these plans to be finalized by June 1, 1999.

This Part 70 permit application merely combines the facility information contents of two (2) existing Illinois EPA Bureau of Air "*Continuous Joint Construction And Operating Permits*" (I.D. No.'s 201801AAF & 201808ADB). These permits involve a developing landfill with associated flare and sludge dryer gas controls. We trust that the enclosed information fulfills the administrative requirements for Part 70 permitting. Should you have questions, or if you need additional information, please contact Mr. Thomas Hilbert at (815) 874-4806 or myself at the Indianapolis office.

Sincerely,
Andrews Environmental Engineering, Inc.

Robert L. West
Environmental Engineer

enclosure

cc: Thomas Hilbert
Bill Paraskevas
John Lardner

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WRS - PAGEL LANDFILL

PART 70 PERMIT APPLICATION

Prepared for

Winnebago Reclamation Services Inc.

Pagel Landfill

Winnebago County, Illinois

February 19, 1999

CAAPP Part 70 Operating Permit Application
Winnebago Reclamation Service, Inc.

Pagel Landfill

Distribution

No. of Copies	Sent to
2	Mr. Donald Sutton, P.E. Manager, Air Permit Section Division of Air Pollution Control Illinois Environmental Protection Agency 2200 Churchill Road Springfield, IL 62794-9276
2	Mr. Thomas Hilbert Environmental Engineer Winnebago Reclamation Service, Inc. 4920 Forest Hills Road Loves Park, IL 61111

WRS-PAGEL LANDFILL

PART 70 PERMIT APPLICATION

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Appendices

1.0 Executive Summary

Pagel Landfill is subject to 40 CFR 60, Subpart WWW—Standards of Performance for Municipal Solid Waste Landfills (NSPS). According to the NSPS, any municipal solid waste (MSW) landfill with a design capacity greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m3) is subject to part 70 permitting requirements [40 CFR 60.752(b)]. The *Initial Design Capacity and Nonmethane Organic Compounds (NMOC) Emission Rate Reports* for WRS - Pagel Landfill (dated June 10, 1996) reported a design capacity of 4.65 million Mg for the site. As a result, the site is subject to part 70 permitting requirements.

Because IEPA's streamlined part 70 permit application forms have been prepared for "typical" emissions sources, the format of the enclosed forms may vary slightly from the standard format. Any additional information not provided on these forms may be found in the body of this document. Much of the emission and facility information was taken directly from the source's IEPA Division of Air "Joint Continuous Construction And Operating Permits" (I.D. Nos. 201801AAF & 201808ADB) for a developing landfill with a flare and sludge dryer gas control system. A copy of the permits are included in Appendix C. The remaining emissions, including Hazardous Air Pollutants (HAPs) and fugitive dust sources, are estimated as shown in Appendix A.

The part 70 permit application includes information on the compliance status of the site. One requirement of the NSPS for MSW landfills is the submittal of a gas collection system for sites with nonmethane organic compound (NMOC) emissions greater than 50 Mg/yr. According to the most recent *Design Capacity Report*, the site's annual NMOC emission rate for the years 1996 - 1998 was on the order of 500 Mg/yr. Therefore, the site is required to submit plans for a gas collection system. Pagel Landfill recently applied for a permit modification from IEPA's Bureau of Land Management (BLM) for a Significant Modification associated with the landfill's South Unit regarding the Liner, Cap and Leachate Collection Redesign. The site is awaiting approval from IEPA's BLM. The permit modification application for this modification includes a gas management plan consistent with the gas system previously approved by IEPA. Although similar plans for a gas management system have been approved by IEPA's BLM and Division of Air, these plans may not completely fulfill the requirements of the NSPS; particularly in the older areas of the landfill. To fulfill all related requirements, the final part 70 application will *include NSPS Gas Collection & Control System Design Plans*, and a *Title V Compliance Monitoring & Response Plan.*

2.0 General Information

Winnebago Reclamation Service, Inc. owns and operates the Pagel Landfill, which is an existing municipal solid waste disposal facility located at 8403 Lindenwood Road, Rockford Illinois. It is approximately four miles south of the city of Rockford. A site location map showing the landfill location relative to nearest residences, nursing homes, hospitals, schools, and manufacturing establishments is depicted in Figure 1-1. The facility accepts municipal solid waste, construction and demolition debris and non-hazardous special waste.

The facility includes an existing waste disposal unit (northern unit) that is currently under operation and an expansion unit (southern unit) that is under development. Figure 1-2 shows the facility layout. The northern unit comprises 42.7 acres. Its operation is permitted under Illinois Environmental Protection Agency (IEPA) Permit Number 1991-138-LF. Operation of the northern unit should be completed by 2001. The southern unit comprises 27.5 acres.

3.0 Process / Control Information

Permitted Facilities

An enclosed landfill gas combustion flare is permitted by IEPA (ID No. 201801AAF) for the existing landfill. The proposed location of the flare is shown on the Landfill Gas (LFG) Collection System & Flare plan, Sheet 2 in Appendix D. The LFG collection system and flare are designed to minimize LFG gas migration away from the site.

The west half (approximate) of the existing unit is equipped with an active gas collection system. In this area, landfill gas is extracted via compressors located in an on-site gas processing plant operated by the Winnebago Gas Company. The compressed gas is transferred and combusted in a thermal sewage sludge dewatering plant operated by NRG Technologies, Inc. The NRG equipment is operated under IEPA permit ID No. 201808ADB.

The LFG Collection System & Flare plan (Sheet 2, Appendix D) depicts the existing and planned gas collection system in the landfill. The system will utilize approximately 37 vertical gas extraction wells and associated header pipes to extract LFG and transport it to the enclosed flare or NRG. All perimeter wells around the east end have been installed. Only interior wells on the east end have yet to be installed. The extraction wells and horizontal collection system are being expanded to the west to further control gas migration. These details will also be included in a Continual Joint Construction and Operation Air Permit. In addition, gas from the collection system located in the west half of the site may be directed to the proposed flare when then NRG plant is not in operation (typically weekends and holidays).

As filling progresses in the existing unit, the temporary extraction wells and header pipes will be removed or abandoned and a permanent gas collection system will be installed upon closure of the this unit, by 2001. The proposed flare will be operated 24 hours per day, 365 days per year. It is anticipated that the flare will be operated at the flare's maximum capacity of 1,000 standard cubic feet per minute (SCFM).

The enclosed flare will be capable of achieving 98% combustion efficiency.

Start-Up Procedures

The flare station will be equipped with a propane pilot system that will facilitate start-up. No significant increase in emissions is expected during start-up procedures.

Breakdowns and Outages

Pre-packaged flare stations are generally reliable and require a minimum of down time. The flare station will be equipped with a "down time" timer that will automatically deactivate the blowers and reignite the flame if the flare is extinguished by wind or inadequate methane content in the gas.

4.0 Compliance Data

Instrumentation and Monitoring

The flare station will be equipped with a flow meter mounted on the main gas collection header. Records of monthly landfill gas combustion will be kept on-site. In addition, landfill gas will be sampled and analyzed at least monthly for methane content, carbon dioxide, nitrogen, and oxygen.

5.0 Emissions Characterization

Calculations for the emissions from the flare are provided in Appendix A. Maximum theoretical emissions (MTE) are based on 24 hours per day, 365 days per year operation at the maximum capacity of the flare, 1,000 SCFM of LFG. To be conservative, is assumed that actual average emissions are the same as MTE.

—Source Pollutant Emissions Summary
Sample Calculations

Emissions for Unit ID# CE1 (flare) were taken directly from information contained in the facility's existing air construction permit which is included in Appendix C of this permit application. For the administrative Part 70 application purposes, the sludge dryer is considered a trivial activity and emissions from this unit are not included separately in this permit application. However, total uncontrolled Potential to Emit (PTE) emissions from the landfill are provided in Appendix A - Table I. Also, controlled PTE in Table IV includes representative emissions from landfill gas combustion as well as emissions from the sludge dryer as indicated on the Flow Diagram.

Emissions for Unit ID# 2 (fugitive emissions from landfill gas (LFG) generation) include fugitive landfill gas emissions and fugitive dust emissions. Fugitive LFG emissions are required in determining applicability and source definition for the Part 70 permitting program. The following discussion demonstrates how these emissions are determined.

Task: *Determine fugitive emissions from landfill gas (LFG).*

Solution:

The first step in determining the fugitive LFG emissions from the landfill surface is to determine the methane generation rate from the landfill. Because the landfill continues to accept waste, the methane generation rate will continue to increase annually. U.S.EPA's *Landfill Air Emissions Estimation Model* was used to calculate the methane generation rate based on model parameter values listed in AP-42. Additionally, the future waste acceptance rate was estimated based on previous annual acceptance rates and is assumed to be steady through the closure year of 2004. Waste acceptance rates prior to 1997 were taken from the Revised Design Capacity Report for Pagel Landfill, Appendix A, Attachment E. Output from the EPA model is shown in Table B-I.

Table B-I. Output from EPA's *Landfill Air Emissions Estimation Model* using AP-42 (Fifth Edition) information for model input parameters.

Source: C:\PROJECTS\PAGELL~1\TITLEV.PRM

Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0400 1/yr ***** User Mode Selection *****
NMOC : 924.00 ppmv ***** User Mode Selection *****
Methane : 55.0000 % volume
Carbon Dioxide : 45.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1972 Current Year : 1999 Closure Year: 2004
Capacity : 4689000 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 269331.89 Mg/year

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	(Cubic m/yr)
1973	9.972E+04	2.661E+02	3.989E+05
1974	1.994E+05	5.218E+02	7.821E+05
1975	2.992E+05	7.674E+02	1.150E+06
1976	3.989E+05	1.003E+03	1.504E+06
1977	4.986E+05	1.230E+03	1.844E+06
1978	5.983E+05	1.448E+03	2.171E+06
1979	6.980E+05	1.657E+03	2.484E+06
1980	7.977E+05	1.859E+03	2.786E+06
1981	8.975E+05	2.052E+03	3.075E+06
1982	9.972E+05	2.237E+03	3.354E+06
1983	1.097E+06	2.416E+03	3.621E+06
1984	1.197E+06	2.587E+03	3.878E+06
1985	1.296E+06	2.752E+03	4.125E+06
1986	1.396E+06	2.910E+03	4.362E+06
1987	1.496E+06	3.062E+03	4.590E+06
1988	1.595E+06	3.208E+03	4.809E+06
1989	1.695E+06	3.348E+03	5.019E+06
1990	1.795E+06	3.483E+03	5.221E+06
1991	1.895E+06	3.613E+03	5.415E+06
1992	1.994E+06	3.737E+03	5.602E+06
1993	2.094E+06	3.857E+03	5.781E+06
1994	2.194E+06	3.972E+03	5.953E+06
1995	2.294E+06	4.082E+03	6.119E+06
1996	2.537E+06	4.572E+03	6.853E+06
1997	2.801E+06	5.098E+03	7.641E+06
1998	3.077E+06	5.634E+03	8.445E+06
1999	3.342E+06	6.121E+03	9.175E+06
2000	3.612E+06	6.600E+03	9.892E+06
2001	3.881E+06	7.059E+03	1.058E+07
2002	4.150E+06	7.501E+03	1.124E+07
2003	4.420E+06	7.926E+03	1.188E+07
2004	4.689E+06	8.334E+03	**1.249E+07**

As the output indicates, the methane generation rate for 2004 is 1.249 x 10^7 m^3/yr. The uncontrolled fugitive emission rate of individual LFG compounds can be calculated by using the following equation (AP-42, Fifth Ed., Sec. 2.4.4.1, Equ. 5):

$$Q_{comp} = 1.82 Q_{CH_4} * \frac{C_{comp}}{1*10^6} \qquad \text{(Equation B-1)}$$

where: Q_{comp} = Individual compound emission rate (m^3/yr);

Q_{CH_4} = Methane generation rate (m^3/yr) (from EPA model);

C_{comp} = Individual compound concentration in landfill gas (ppmv); and

1.82 = Multiplication factor (assumes that approximately 55 percent of landfill gas is methane).

Regulated pollutants contained in LFG include CO, VOCs, and various HAPs. The following sample calculations are used to determine the fugitive CO emissions from the landfill. The volumetric CO emissions are first calculated using Equation B-1:

C_{CO} = 141.0 ppmv (AP-42, Fifth Ed., Sec. 2.4-1)

$$Q_{CO} = 1.82\left(1.249*10^7 \, {}^{m^3}/_{yr}\right)\left(\frac{141.0 ppmv}{1*10^6}\right)$$

$$Q_{CO} = 3{,}205 \, {}^{m^3}/_{yr}$$

Next, the mass CO emission rate can be determined. Mass emissions for individual LFG compounds can be estimated from the following equation (AP-42, Fifth Ed., Sec. 2.4.4.1, Equ. 6):

$$I_{comp} = Q_{comp}\left[\frac{MW_{comp}}{\left(8.205*10^{-5} \, {}^{m^3 \cdot atm}/_{mol \cdot {}^\circ K}\right)\left(1000 \, {}^{g}/_{kg}\right)\left(273+T\right)}\right] \qquad \text{(Equation B-2)}$$

where: I_{comp} = Individual compound mass emission rate (kg/yr);

Q_{comp} = Individual compound emission rate (m^3/yr);

T = Temperature of landfill gas (°C); and

MW_{comp} = Molecular weight of individual compound (g/mol).

The uncontrolled mass CO emission rate is now calculated using Equation B-2 based on the following:

MW_{CO} = 28.01 g/mol;
T = 20 °C (assumed);
Q_{CO} = 3,205 m^3/yr; and
Atmospheric pressure = 1 atm.

$$I_{CO} = \left(3{,}205 \, {}^{m^3}/_{yr}\right)\left\{\frac{28.01 \, {}^{g}/_{mol}}{\left(8.205*10^{-5} \, {}^{m^3 \cdot atm}/_{mol \cdot {}^\circ K}\right)\left(1000 \, {}^{g}/_{kg}\right)\left[(273+20){}^\circ K\right]}\right\}(1 atm)$$

$$I_{CO} = 3{,}734 \, {}^{kg}/_{yr}, \text{ or}$$

$$I_{CO} = 4.12\text{tpy (uncontrolled emission rate)}$$

Finally, the fugitive CO emission rate is determined. Fugitive emissions result because the LFG collection system is not capable of achieving a 100% collection efficiency. Uncollected emissions can be calculated with the following equation (AP-42, Fifth Ed., Sec. 2.4.4.2, Equ. 7):

$$1 - \frac{\%\ \text{Collection Efficiency}}{100} \quad \text{(Equation B-3)}$$

The total fugitive CO emission rate is then calculated based on a system collection efficiency of 70%:

$$\text{Fugitive CO emissions} = (4.12\ \text{tpy})\left(1 - \frac{70}{100}\right)$$

$$\boxed{\text{Fugitive CO emissions} = 1.24\ \text{tpy}}$$

The total fugitive VOC emissions, as well as individual fugitive HAP emissions (**Form**), were calculated using the same procedures as those above for fugitive CO emissions. These emissions are listed in Appendix A.

—Source HAP Pollutant Summary

Sample Calculations

The HAP emissions from Unit ID# CE1 (flare) were taken directly from the facility's air construction permit as described in the Sample Calculations section. Fugitive HAP emissions from Unit ID# 2 (landfill fugitive emissions) as a result of uncollected LFG were calculated by the same procedures used in the sample calculation for fugitive CO emissions in the Sample Calculations. Table IV in Appendix A displays all of the expected HAP emissions during the term of this Part 70 permit.

APPENDIX A
EMISSIONS CALCULATIONS

Attachment A

Annual Waste Acceptance Rates

WRS - Pagel Landfill

Annual Waste Acceptance Rates[1]

Year	Refuse Acceptance Rate (tons)	Refuse Acceptance Rate (Mg)	Cumulative Total Refuse In-place (Mg)
1972	109,846	99,718	0
1973	109,846	99,718	99,718
1974	109,846	99,718	199,436
1975	109,846	99,718	299,153
1976	109,846	99,718	398,871
1977	109,846	99,718	498,589
1978	109,846	99,718	598,307
1979	109,846	99,718	698,025
1980	109,846	99,718	797,743
1981	109,846	99,718	897,460
1982	109,846	99,718	997,178
1983	109,846	99,718	1,096,896
1984	109,846	99,718	1,196,614
1985	109,846	99,718	1,296,332
1986	109,846	99,718	1,396,049
1987	109,846	99,718	1,495,767
1988	109,846	99,718	1,595,485
1989	109,846	99,718	1,695,203
1990	109,846	99,718	1,794,921
1991	109,846	99,718	1,894,639
1992	109,846	99,718	1,994,356
1993	109,846	99,718	2,094,074
1994	109,846	99,718	2,193,792
1995	268,232	243,501	2,293,510
1996	291,102	264,262	2,537,011
1997	303,960	275,935	2,801,273
1998	292,060	265,132	3,077,208
1999	296,720	269,362	3,342,340
2000	296,720	269,362	3,611,702
2001	296,720	269,362	3,881,064
2002	296,720	269,362	4,150,426
2003	296,720	269,362	4,419,788
2004	closed	closed	4,689,150

1. Acceptance rates for 1972-1994 are averaged, based on total existing North Unit waste capacity of 3,322,000 Mg less both waste accepted in 1995 and remaining existing unit volume at the end of 1995 (from May 1996 Sig. Mod. Application, Vol. II of II, Attachment 23).
2. Site design waste capacities (including both North and South Units) of 4,689,150 Mg (Total) are from Revised Design Capacity Report, 2-25-99.
3. Waste acceptance rates for 1995-1998 were taken from information provided by WRS - Pagel Landfill, 1-05-99.

PAGEL LANDFILL

Revised Design Capacity Calculations

Prepared for

Winnebago Reclamation Service, Inc.

Winnebago County, Illinois

February 25, 1999

REVISED DESIGN CAPACITY CALCULATIONS

Winnebago Reclamation Service, Inc.

PAGEL LANDFILL

INITIAL DESIGN CAPACITY

The waste design capacity for Winnebago Reclamation Service, Inc. (WRS) - Pagel Landfill is being amended from the original document submitted to IEPA June 10, 1996 entitled, *"Initial Design Capacity and Nonmethane Organic Compounds Emission Rate Reports"* (IDCR), see Appendix A. For this report, the total airspace and plan area of the existing unit and the expansion unit at the site were initially calculated using AutoCAD release 12 and Softdesk AutoCAD Civil version 12.0. For that report, the maximum design capacity for the facility was determined to be 8,530,000 cy (4,645,000 Mg and 6,522,000 m^3); therefore, pursuant to 40 CFR, Subpart WWW – Standards of Performance for Municipal solid waste Landfills (NSPS) WRS - Pagel Landfill expected to be subject to NSPS reporting and permitting requirements.

REVISED DESIGN CAPACITY

1. **Airspace calculations:** The most recent volumetric capacity for the landfill is being revised consistent with the latest amendments included with the Illinois EPA Bureau of Land, Significant Permit Modification Application *Liner, Cap and Leachate Collection Redesign of Pagel Landfill – South Unit, December, 1998.* Effective Net Air Space calculations for the South Unit are attached in a Foth & Van Dyke Memorandum, dated February 9, 1998, Attachment B. The revised Net Airspace for Pagel Landfill is detailed below:

	North Unit	South Unit	Total Net Airspace
Net Airspace (yd^3):	6,100,000	2,509,000	8,609,000
Plan area (ac):	42.7	27.5	

2. **Average depth of solid waste:** The average effective depth of solid waste was calculated by dividing the total net airspace by the plan area.

North Unit: $d = [6{,}100{,}000\ yd^3 \times 27\ ft^3/yd^3] / [42.7 \times 43{,}560\ ft^2/ac] = 88.5\ ft$

South Unit $d = [2{,}509{,}000\ yd^3 \times 27\ ft^3/yd^3] / [27.5 \times 43{,}560\ ft^2/ac] = 56.6\ ft$

3. **Average solid waste acceptance rate:** For the North Unit, the average solid waste acceptance rate was calculated by dividing the remaining net airspace by the number of years the facility is expected to remain operational. The north unit first received waste in 1972. Remaining airspace capacity is calculated using AutoCAD Release 13 V. C4 and Softdesk Earthworks Release 7, Average End method, from Log. 1995-250, Vol. II of II, Attachment 23 of the May 1996 *"Application for Significant Modification to Permit for an Existing Unit", Appendix C.* The remaining net refuse capacity at end of 1995 was estimated at 1,442,200 cy for the north unit.

6,100,000 cy - 1,442,200 cy = 4,657,800 cy **1996 Waste In-Place**
(@ 0.7646 m^3 / cy = 3.56 x 10^6 m^3)

4,657,800 cy x 1,200 lb/cy /2,000 lb/ton = **2,794,680 tons**
(@ 0.9078 Mg / ton = 2.537 x 10^6 Mg)

In order to determine the early average annual waste acceptance rates, first the total waste in-place through 1995 (4,657,800 cy or 3,561,354 m^3), less waste receipts for 1995 was determined as follows:

Waste acceptance rates are available for Pagel Landfill for the following years:

	1998	**1997**	**1996**	**1995**
Waste Received (tons)	292,060	303,960	291,102	268,232
@ 0.9078 Mg / ton (Mg)	265,132	275,935	264,262	243,501

2.537011 x 10^6 Mg - 243,501 Mg = 2,293,510 Mg 1995 In-Place

This mass was divided evenly for the years1972 through 1994 (23 years). An average annual acceptance rate was estimated to be 99,718 Mg/yr (109,846 tons/year @ 0.9078 Mg / ton).

For the end of 1995, the combined remaining refuse capacity for both the north and south units amount to:

1,442,200 cy + 2,509,000 cy = 3,951,200 cy 1996 Available
(@ 0.7646 m^3 / cy = 3.021 x 10^6 m^3)

3,951,200 cy x 1,200 lb/cy /2,000 lb/ton = 2,370,720 tons
(@ 0.9078 Mg / ton = 2,152,139.62 Mg)

The annual waste acceptance rates were used in the methane generation estimation model to arrive at a remaining waste capacity of 1,346,810 Mg at the beginning of 1999. This remaining capacity vs. the most recent acceptance rate projects a remaining life of 4 ½ years. Five years was used for an even distribution of methane generation in the model through the year 2003.

1,346,810 Mg / 5 years = 269,362 Mg/yr Refuse Acceptance for 1999-2004

4. **Compaction Density:** A net density of 1,200 lb/ lb/cy is used for these calculations, assuming a 2:1 compaction ratio is achieved for the refuse. This is a conservative value for emission calculation purposes, assuming optimum compaction of waste and that refuse weighs 600 lb/cy when it arrives at the facility, prior to being placed in the landfill. Converted to metric units, this value is equivalent to 0.712 Mg/ m^3.

5. **Design Capacity:** The design capacity of the site was determined by summing the total airspace for the existing and expansion units. Total airspace was converted from cubic yards to cubic meters by multiplying by a conversion factor of 0.7646, and from tons to megagrams by multiplying by a conversion factor of 0.9078. The results of these calculations are detailed below.

	North Unit	South Unit	Total Waste Capacity
Net Airspace (m^3):	4,664,000	1,918,000	6,582,000
Design Capcity (Mg):	3,322,000	1,367,000	4,689,000

APPENDIX A

INITIAL DESIGN CAPACITY REPORT - Calculations

Thomas Hilbert
Environmental Engineer
Winnebago Reclamation
8403 Lindenwood Rd.
Rockford, IL 61109
(815) 874-4806
June 10, 1996

Mr. Donald Sutton
Illinois Environmental Protection Agency
Division of Air Pollution Control
P.O. Box 19506
2200 Churchill Rd
Springfield, IL 62706

Re: New Source Performance Standard Reporting
IEPA Site Number: 2018080001
Pagel Landfill Facility North and South Unit

Dear Mr. Sutton:

Winebago Reclamation Service (WRS) has completed the requested design capacity and nonmethane organic compound emission rate report. If you have any questions or would like any additional information, please feel free to give me a call.

Sincerely,

Thomas Hilbert
Environmental Engineer

Recycling and
waste disposal

4920 Forest
Hills Road
Lo rk
Illi 1111

O. Box 2071
oves Park
inois 61130

).654.5952
x 815.654.4717

INITIAL DESIGN CAPACITY CALCULATIONS

Winnebago Reclamation Service, Inc.
Rockford, Illinois

1. **Airspace calculations:** The total airspace and plan area of the existing unit and the expansion unit at the site were calculated using AutoCAD release 12 and Softdesk AdCadd Civil version 12.0. The results of these calculations are detailed below.

	Existing Unit	Expansion Unit
Total airspace (yd^3):	6,100,000	2,430,000
Plan area (ac):	42.7	27.5

2. **Average depth of solid waste:** The average depth of solid waste was calculated by dividing the total airspace by the plan area.

   Existing Unit:

   $d = [\ 6{,}100{,}000\ yd^3 \bullet 27\ ft^3/yd^3\ ] \div [\ 42.7\ ac \bullet 43{,}560\ ft^2/ac\ ] = 88.5\ ft$

   Expansion unit:

   $d = [\ 2{,}430{,}000\ yd^3 \bullet 27\ ft^3/yd^3\ ] \div [\ 27.5\ ac \bullet 43{,}560\ ft^2/ac\ ] = 54.8\ ft$

3. **Average solid waste acceptance rate:** For the existing unit, the average solid waste acceptance rate was calculated by dividing the total airspace by the number of years the facility is expected to be operational. Since the existing unit first received waste in 1972 and is expected to close early in the year 2001, the site's expected operating life is 29 years. The average solid waste acceptance rate for the expansion unit, which is still in the developmental stage, was assumed to be equal to that calculated for the existing unit. Please note that the compaction density as calculated in Item 4 was used to convert from total cubic yards to tons.

   $R = [\ 6{,}100{,}000\ yd^3\ ] \div 29\ years = 210{,}345\ yd^3/yr$

   $= 210{,}345\ yd^3/yr \bullet 1200\ lb/yd^3 \bullet 0.0005\ ton/lb = 126{,}200\ tons/yr$

4. **Compaction density:** The compaction density of 1200 lb/yd^3 was calculated assuming that the gate density of municipal solid waste is 600 lb/yd^3 and that a 2:1 compaction ratio will be achieved. Converted to metric units, this value is equivalent to 0.712 Mg/m^3.

5. **Design Capacity:** The design capacity of the site was determined by summing the total airspace for the existing and expansion units. Total airspace was converted from cubic yards to cubic meters by multiplying by a conversion factor of 0.7646, and from tons to megagrams by multiplying by a conversion factor of 0.9078. The results of these calculations are detailed below.

	Existing Unit	Expansion Unit	Total Facility
Total Airspace (m^3):	4,664,000	1,858,000	6,522,000
Design Capacity (Mg):	3,322,000	1,323,000	4,645,000

APPENDIX B

Foth & Van Dyke 1/9/98 Memorandum

Waste and Earthwork Quantities for the Pagle Landfill, South Unit, Phase I

Foth & Van Dyke
Memorandum

February 9,1998

TO: John Lardner (DM)

CC: Jim Buchberger
Bill Meinz

FR: Ron Meister

RE: Waste and Earthwork Quantities for the Pagel Landfill, South Unit, Phase 1

As requested, we have competed the volume computations for the Pagel Landfill, South Unit, Phase 1. Note that we have referred to the various development phases as "modules" since the manner in which the landfill is proposed for development does not match the Cells 1, 2, 3 and 4 as proposed in the Plan Mod submitted by Andrews in 1991.

Modules 1, 2, 3, 4, and 5 are shown on Attachments 1 through 5, respectively, as the way which we understand you wish to develop the South Unit. Each attachment shows the top of waste grades for the respective module. Filled modules are shown screened to provide you with a view of the waste slope and base areas filled in the previous module. Because of the size of the final module, a fifth module was added to make the modules more equal in size. If you prefer another configuration, please let us know and we can make the appropriate changes.

The attached table lists the earthwork "cut" and "fill" and the "net air space". The net air space is the volume between the top of the sand drainage layer and the bottom of the final cover including daily and intermediate cover, if any. Also provided are the daily cover volumes based on a 20% allowance for daily cover as per the Andrews 1991 Sig Mod.

REM:lxb

Attachments

Module	Earthwork* Cut (cy)	Earthwork* Fill (cy)	Earthwork Net (cy)	Net Air Space (cy)	Daily Cover** (cy)
1	175,230	28,730	146,500	331,970	66,390
2	61,960	8,210	53,750	413,100	82,620
3	112,790	12,150	100,640	477,530	95,500
4	78,230	2,940	75,290	692,750	138,500
5	122,220	7,520	114,700	1,221,380	244,280
Total	550,430	59,550	490,880 (cut)	3,136,730	627,340

Prepared by: JR82
Checked by: REM

* The cut-and-fill volumes may vary based on the actual extent of excavation and grading completed. Perimeter roadways and ditching are not included in these volume estimates except for Module 1.

** Daily cover calculated assuming a 20% allowance for daily cover as per Andrews 1991.

ANDREWS ENVIRONMENTAL ENGINEERING INC.
29W100 Butterfield Road, Suite 105, Warrenville, Illinois 60555 / (630) 393-9474 Fax (630) 393-9495

FAX DATA SHEET

DATE: 2/24/99

TIME: 12:45 pm

ORIGINALS:

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TO: Bob West

FAX NUMBER: (317) 598-9929

JOB NUMBER/CLIENT NUMBER: 90-114

FROM: John LaRoche

ANDREWS ENVIRONMENTAL ENGINEERING, INC.
FAX NUMBER: (630) 393-9495

NUMBER OF PAGES (including this sheet): 3

MESSAGES OR REMARKS (IF ANY):

Bob –

Attached are the volumes calculated for the redesigned South Unit at Pogel Landfill. The net air space volume does not include final cover. Final cover would add approximately 177,500 cu. yds. to the the net air space volume.

John

If you experience any difficulty receiving this transmission, please notify: _____ as soon as possible at (630) 393-9474.

THANK YOU!

faxcover

APPENDIX C

IN-PLACE WASTE CALCULATIONS

Source: *"Application for Significant Modification to Permit for an Existing Unit"* - IEPA

Site No. 2018080001, May, 1996, Log. 1995-250, Vol. II of II, Attachment 23

SITE CAPACITY AND OPERATING LIFE CALCULATIONS

Given:

1. All volume calculations are based on the final grades depicted on Sheet B-3 of the site developmental drawings.

2. All volumes calculations represent total airspace. Final cover and daily/intermediate cover are not taken into account.

2. All volume calculations were performed using AutoCAD Release 13 v. C4 and Softdesk Earthworks Release 7, Average End method. The volumes reported are the average of two calculations, one using east-west sections and one using north-south sections, rounded to the nearest hundred cubic yards. The grid method was also used to verify the results.

Calculations:

Volume 1

The total increase in airspace for the final grades permitted under 35 IAC 807 to the proposed final grades depicted on Sheet B-3 was calculated. The final grades permitted under 35 IAC 807 are depicted in Figure 1.

Total Airspace:	1,629,000 c.y.

Volume 2

The total remaining airspace as of November, 1995 was calculated using the existing topography on Sheet B-1 and the proposed final grades depicted on Sheet B-3.

Total Airspace:	1,818,700 c.y.

Site Life

The site life was calculated using the remaining airspace and assuming a waste acceptance rate of 575 tons per day. The average density of as-received waste was assumed to be 600 lb/c.y. The final cover volume calculations are detailed in Attachment 21 (Clay Soil Availability Calculations) and the daily/intermediate cover volume was assumed to be 5% of the remaining airspace minus the final cover volume.

Remaining Airspace (as of November, 1995):	1,818,700 c.y.
Final Cover Volume:	300,600 c.y.
Daily Cover Volume	75,900 c.y.
Total Refuse Capacity:	**1,442,200 c.y.**

Operating Days per Year		286 days
Gate Refuse Received per Day		1,917 c.y.
Gate Refuse Received per Year		548,167 c.y.
Airspace Consumed per Year (in-place, assume 2:1 compaction ratio)		**274,083 c.y.**
Site Life (as of November, 1995):	1,442,000 ÷ 274,083 =	5.3 years

Therefore, the unit has a remaining site life of less than 5.3 years and will stop accepting refuse near the early in the year 2001. Closure will continue throughout the year 2001.

Attachment B

Landfill Gas Emissions Model (v. 2.01)

- Methane Generation Rate
- Carbon Monoxide (CO)
- Non-Methane Organic Compounds (NMOC)
- Volatile Organic Compounds (VOC)
  - Toluene

Table I.
WRS - Pagel Landfill
Emissions Estimated Before Controls at Year 2004

Methane generation rate (from Landfill Gas Emission model)[1] = **1.249E+07** m^3/yr
= 839 cfm methane
= 1,526 cfm LFG (assuming methane conc. 55%
Assumed LFG temperature = **20** °C (same temperature used by EPA *Landfill Gas Emission Model*)
Assumed efficicency of LFG collection system[2] = **75%** (used to determine fraction of LFG components collected from landfill)

Compound	*Molecular Weight*[4]	*Median Concentration*[4] *(ppmv)*	*Landfill Emission Rate*[5] *(m^3/yr)*	*Landfill Emission Rate*[6] *(kg/yr)*	*Total Landfill Emissions Before Collection (tpy)*	*Captured LFG Emissions 75% (tpy)*	*Fugitive Landfill Emissions (tpy)*	*Total Uncontrolled Emissions (state PTE per 326 IAC 1-2-55) (tpy)*
Criteria Pollutants								
Carbon monoxide (CO)	28.01	141	3,202	3,729	4.1	*3.08*	*1.03*	4
VOC[3] (as hexane)	86.18	360.4	8,184	29,324	32.3	*24.24*	*8.08*	32.3
PM_{10} (fugitive dust from vehical traffic)		See attached calculations					*11*	11.0
Other Regulated Pollutants								
NMOC (regulated under §111 [NSPS] of CAA)	86.18	924	20,983	75,181	82.9	*62.15*	*20.72*	82.9
Hazardous Air Pollutants (HAPs)								
1,1,1-Trichloroethane (methyl chloroform)	133.42	0.48	11	60.46	0.07	*0.05*	*0.017*	0.07
1,1,2,2-Tetrachloroethane	167.85	1.11	25	175.90	0.19	*0.15*	*0.048*	0.19
1,1-Dichloroethane (ethylidene dichloride)	98.95	2.35	53	219.54	0.24	*0.18*	*0.061*	0.24
1,1-Dichloroethene (vinylidene chloride)	96.94	0.20	5	18.30	0.02	*0.02*	*0.005*	0.02
1,2-Dichloroethane (ethylene dichloride)	98.96	0.41	9	38.31	0.04	*0.03*	*0.011*	0.04
1,2-Dichloropropane (propylene dichloride)	112.98	0.18	4	19.20	0.02	*0.02*	*0.005*	0.02
Acrylonitrile	53.06	6.33	144	317.10	0.35	*0.26*	*0.087*	0.35
Carbon disulfide	76.13	0.58	13	41.69	0.05	*0.03*	*0.011*	0.05
Carbon tetrachloride	153.84	0.004	0	0.58	6.40E-04	*4.80E-04*	*1.60E-04*	6.40E-04
Carbonyl sulfide	60.07	0.49	11	27.79	0.03	*0.02*	*0.008*	0.03
Chlorobenzene	112.56	0.25	6	26.57	0.03	*0.02*	*0.007*	0.03
Chloroethane (ethyl chloride)	64.52	1.25	28	76.14	0.08	*0.06*	*0.021*	0.08
Chloroform	119.39	0.03	1	3.38	3.73E-03	*2.80E-03*	*9.32E-04*	3.73E-03
Dichlorobenzene[8]	147.00	0.21	5	29.15	0.03	*0.02*	*0.008*	0.03
Dichloromethane (methylene chloride)	84.94	14.30	325	1,146.78	1.26	*0.95*	*0.316*	1.26
Ethyl benzene	106.16	4.61	105	462.05	0.51	*0.38*	*0.127*	0.51
Hexane	86.18	6.57	149	534.57	0.59	*0.44*	*0.147*	0.59
Mercury (total)	200.61	2.92E-04	0	0.06	6.10E-05	*0.00*	*1.52E-05*	6.10E-05
Methyl ethyl ketone	72.11	7.09	161	482.70	0.53	*0.40*	*0.133*	0.53
Methyl isobutyl ketone	100.16	1.87	42	176.83	0.19	*0.15*	*0.049*	0.19
Perchloroethylene (tetrachloroethylene)	165.83	3.73	85	583.99	0.64	*0.48*	*0.161*	0.64
Trichloroethylene (trichloroethene)	131.38	2.82	64	349.79	0.39	*0.29*	*0.096*	0.39
Vinyl chloride	62.5	7.34	167	433.12	0.48	*0.36*	*0.119*	0.48
Xylenes	106.16	12.10	275	1,212.77	1.34	*1.00*	*0.334*	1.34
Benzene	78.11	1.91	43	140.85	0.16	*0.12*	*0.039*	0.16
Toluene	92.13	39.30	892	3,418.42	3.77	*2.83*	*0.942*	3.77

Total uncontrolled landfill HAPs[9] = 11.0

Notes:
1. Methane generation rate calculated by use of EPA's Landfill Gas Emissions Model. See attached calculations.
2. Default values taken from AP-42 Supplement D (August 1998).
3. VOC median concentration taken from Footnote c of Table 2.4-2, AP-42 Supplement D (August 1998), for sites without co-disposal. VOC mol. weight assumed to be the same as NMOC (as hexane).
4. Values taken from Tables 2.4-1 and 2.4-2 of AP-42 Supplement D (August 1998).
5. Values calculated using Equation 3 of AP-42 Supplement D (August 1998) assuming multiplication factor of 2 instead of 1.82 (methane conc. assumed to be 55% per NSPS Gas Collection Design Plan).
6. Values calculated using Equation 4 of AP-42 Supplement D (August 1998).
7. Both captured and fugitive emissions were used to determine potential to emit per 326 IAC 1-2-55.
8. Assumes dichlorobenzene exists in its para isomer state (the para isomer is a Title III-listed HAP).
9. Total HAP emissions generated by landfill before control indicate that the source is a potential major source under §112 of the CAA.

Table II.
WRS - Pagel Landfill
Estimated Uncontrolled Part 70 PTE at Year 2004

Methane generation rate (from Landfill Gas Emission model)[1] = 1.249E+07 m^3/yr (assume methane conc. = 55%)
= 839 cfm methane
= 1,526 cfm LFG (assuming methane conc. 55%
Assumed LFG temperature = 20 °C (same temperature used by EPA *Landfill Gas Emission Model*)
Assumed efficiency of LFG collection system[2] = 75% (used to determine fraction of LFG components collected from landfill)

Compound	*Molecular Weight*[4]	*Median Concentration*[4] *(ppmv)*	*Landfill Emission Rate*[5] *(m^3/yr)*	*Landfill Emission Rate*[6] *(kg/yr)*	*Total Landfill Emissions Before Collection (tpy)*	*Captured LFG Emissions (75%) (tpy)*	*Fugitive Landfill Emissions (tpy)*	*Total Uncontrolled Emissions (PTE)* *(tpy)*
Criteria Pollutants								
Carbon monoxide (CO)	28.01	141	3,202	3,729	4.1	3.08	1.03	4.
VOC[3]	86.18	360.4	8,184	29,324	32.3	24.24	8.08	32.3
PM_{10} (fugitive dust from vehical traffic)	----------	----------	See attached calculations	----------	----------	----------	11	8.9
Other Regulated Pollutants								
NMOC (regulated under §111 [NSPS] of CAA)	86.18	924	20,983	75,181	82.9	62.15	20.72	82.9
Hazardous Air Pollutants (HAPs)								
1,1,1-Trichloroethane (methyl chloroform)	133.42	0.48	11	60.5	0.07	0.05	0.017	0.07
1,1,2,2-Tetrachloroethane	167.85	1.11	25	175.9	0.19	0.15	0.048	0.19
1,1-Dichloroethane (ethylidene dichloride)	98.95	2.35	53	219.5	0.24	0.18	0.061	0.24
1,1-Dichloroethene (vinylidene chloride)	96.94	0.20	5	18.3	0.02	0.02	0.005	0.02
1,2-Dichloroethane (ethylene dichloride)	98.96	0.41	9	38.3	0.04	0.03	0.011	0.04
1,2-Dichloropropane (propylene dichloride)	112.98	0.18	4	19.2	0.02	0.02	0.005	0.02
Acrylonitrile	53.06	6.33	144	317.1	0.35	0.26	0.087	0.35
Carbon disulfide	76.13	0.58	13	41.7	0.05	0.03	0.011	0.05
Carbon tetrachloride	153.84	0.004	0	0.6	6.40E-04	4.80E-04	1.60E-04	6.40E-04
Carbonyl sulfide	60.07	0.49	11	27.8	0.03	0.02	0.008	0.03
Chlorobenzene	112.56	0.25	6	25.6	0.03	0.02	0.007	0.03
Chloroethane (ethyl chloride)	64.52	1.25	28	76.1	0.08	0.06	0.021	0.08
Chloroform	119.39	0.03	1	3.4	3.73E-03	2.80E-03	9.32E-04	3.73E-03
Dichlorobenzene[8]	147.00	0.21	5	29.1	0.03	0.02	0.008	0.03
Dichloromethane (methylene chloride)	84.94	14.30	325	1,146.8	1.26	0.95	0.316	1.26
Ethyl benzene	106.16	4.61	105	462.1	0.51	0.38	0.127	0.51
Hexane	86.18	6.57	149	534.6	0.59	0.44	0.147	0.59
Mercury (total)	200.61	2.92E-04	0	0.1	6.10E-05	4.57E-05	1.52E-05	6.10E-05
Methyl ethyl ketone	72.11	7.09	161	482.7	0.53	0.40	0.133	0.53
Methyl isobutyl ketone	100.16	1.87	42	176.8	0.19	0.15	0.049	0.19
Perchloroethylene (tetrachloroethylene)	165.83	3.73	85	584.0	0.64	0.48	0.161	0.64
Trichloroethylene (trichloroethene)	131.38	2.82	64	349.8	0.39	0.29	0.096	0.39
Vinyl chloride	62.5	7.34	167	433.1	0.48	0.36	0.119	0.48
Xylenes	106.16	12.10	275	1,212.8	1.34	1.00	0.334	1.34
Benzene	78.11	1.91	43	140.9	0.16	0.12	0.039	0.16
Toluene	92.13	39.30	892	3,418.4	3.77	2.83	0.942	3.77
							Total uncontrolled landfill HAPs=	11.5

Notes:
1. Methane generation rate calculated by use of EPA's Landfill Gas Emissions Model. See attached calculations.
2. Default values taken from AP-42 Supplement D (August 1998).
3. VOC median concentration taken from Footnote c of Table 2.4-2, AP-42 Supplement D (August 1998), for sites without co-disposal. VOC mol. weight assumed to be the same as NMOC (as hexane).
4. Values taken from Tables 2.4-1 and 2.4-2 of AP-42 Supplement D (August 1998).
5. Values calculated using Equation 3 of AP-42 Supplement D (August 1998) assuming multiplication factor of 2 instead of 1.82 (methane conc. assumed to be 55% per NSPS Gas Collection Design Plan).
6. Values calculated using Equation 4 of AP-42 Supplement D (August 1998).
7. Fugitive dust (PM_{10}) from haul roads is not required in the determination of part 70 major source applicability.
8. Assumes dichlorobenzene exists in its para isomer state (the para isomer is a Title III-listed HAP).

Table III.

WRS - Pagel Landfill

Determination of SO_2 and HCl Emissions (secondary emissions) from Flares

(Total summarized flare emissions are given in Table IV.)

Methane generation rate (from Landfill Gas Emission model) = 1.249E+07 m^3/yr

Methane flow to flares (assume 75% collection efficiency[1] from landfill) = **9.37E+06** m^3/yr (CH_4) 55% Methane

Assumed LFG temperature = 20 °C (same temp. used in EPA model)

Inlet Compound	*Molecular Weight*	*Median Concentration*[1] *(ppmv)*	*Volume to Flare Burner*[2] *(m^3/yr)*	*Mass to Flare Burner*[3] *(kg/yr)*	*Mass to Flare Burner (tpy)*	*Control Efficiency*[4] *(%)*
Reduced sulfur	32.064	46.9	799	1,065	1.2	N/A
Total Chloride as Cl^-	35.453	42.0	715	1,054	1.2	98.0

Emitted Pollutant	*Mass Emissions from Flare Burner*[5] *(kg/yr)*	*Mass Emissions from Flare Burner (tpy)*
Sulfur Dioxide (SO_2)	2,130	*2.3*
Hydrogen Chloride (HCl)[6]	1,064	*1.2*

1. Information taken from AP-42 Supplement D (August 1998), Sec. 2.4.
2. Values calculated using Equation 3 of AP-42 Supplement D (August 1998) assuming multiplication factor of 2 instead of 1.82 (methane conc. assumed to be 55% per NSPS Gas Collection Design Plan).
3. Values calculated using Equation 4 of AP-42 Supplement D (August 1998).
4. Flare control efficiency for halogenated species as indicated in Table 2.4-3 of AP-42 Supplement D (August 1998).
5. Values calculated using Equations 7&10 of AP-42 Supplement D (August 1998).
6. HCl results from combustion of chlorinated species and is only one of several HAPs emitted from flare. See Table IV for total flare emissions.

~~Table IV.~~
WRS - Pagel Landfill
Estimated Controlled Part 70 PTE at Year 2004

Methane generation rate (from Landfill Gas Emission model) = 1.249E+07 m^3/yr (assume methane conc. 55%
Methane flow to flare (assume 75% collection efficiency[1] from landfill) = 9.37E+06 m^3/yr (CH_4)
= 629 scfm CH_4 (conservatively assumed as dscfm methane, used to determine secondary emissions)
Assumed LFG temperature = 20 °C (same temperature used by EPA *Landfill Gas Emissions Model*)

Determination of Primary Flare Compounds (fraction of LFG components not destructed during LFG combustion)

Compound	*Captured LFG Emissions from Landfill[2] (tpy)*	*Control Efficiency[3] (%)*	*Primary Flare Emissions (tpy)*
Criteria Pollutants			
Carbon monoxide (CO)	3.08	0.0	3.08
VOC	24.24	99.2	0.19
Other Regulated Pollutants			
NMOC (regulated under §111 [NSPS] of CAA)	62.15	99.2	0.50
Hazardous Air Pollutants (HAPs)			
1,1,1-Trichloroethane (methyl chloroform)	0.05	98.0	1.00E-03
1,1,2,2-Tetrachloroethane	0.15	98.0	2.91E-03
1,1-Dichloroethane (ethylidene dichloride)	0.18	98.0	3.63E-03
1,1-Dichloroethene (vinylidene chloride)	0.02	98.0	3.03E-04
1,2-Dichloroethane (ethylene dichloride)	0.03	98.0	6.33E-04
1,2-Dichloropropane (propylene dichloride)	0.02	98.0	3.17E-04
Acrylonitrile	0.26	99.7	7.86E-04
Carbon disulfide	0.03	99.7	1.03E-04
Carbon tetrachloride	0.00	98.0	9.61E-06
Carbonyl sulfide	0.02	99.7	6.89E-05
Chlorobenzene	0.02	98.0	4.39E-04
Chloroethane (ethyl chloride)	0.06	98.0	1.26E-03
Chloroform	0.00	98.0	5.59E-05
Dichlorobenzene[4]	0.02	98.0	4.82E-04
Dichloromethane (methylene chloride)	0.95	98.0	1.90E-02
Ethyl benzene	0.38	99.7	1.15E-03
Hexane	0.44	99.7	1.33E-03
Mercury (total)	0.00	0.0	4.57E-05
Methyl ethyl ketone	0.40	99.7	1.20E-03
Methyl isobutyl ketone	0.15	99.7	4.39E-04
Perchloroethylene (tetrachloroethylene)	0.48	98.0	9.66E-03
Trichloroethylene (trichloroethene)	0.29	98.0	5.78E-03
Vinyl chloride	0.36	98.0	7.16E-03
Xylenes	1.00	99.7	3.01E-03
Benzene	0.12	99.7	3.49E-04
Toluene	2.83	99.7	8.48E-03
		Total Primary HAP Emissions from Flare =	6.95E-02

Determination of Secondary Flare Compounds (products of LFG combustion)

Compound	*Emission Factor[5] (lb/hr/dscfm methane)*	*Emission Rate (lb/hr)*	*Secondary Flare Emissions (tpy)*
Criteria Pollutants			
Nitrogen oxides (NO_x)[6]	1.50E-02	9.44	41.35
Carbon monoxide (CO)	0.028	17.62	77.19
Particulate matter (PM_{10})	2.90E-03	1.83	7.99
Sulfur dioxide (SO_2)	——See Table II.——		2.35
Hazardous Air Pollutants (HAPs)			
Hydrogen chloride (HCl)	——See Table II.——		1.17

Summary of Total Emissions from Flares

Pollutant	*Primary Flare Emissions (tpy)*	*Secondary Flare Emissions (tpy)*	*Total Flare Emissions (tpy)*
Criteria Pollutants			
CO	3.08	77.19	80.27
VOC	0.19	N/A	0.19
NO_x[6]	N/A	41.35	41.35
PM_{10}	N/A	7.99	7.99
SO_2	N/A	2.35	2.35
Other Regulated Pollutants			
NMOC	0.50	N/A	0.50
Hazardous Air Pollutants (HAPs)			
Total HAPs	0.07	1.17	1.24

Total Controlled PTE from Source

Pollutant	*Total Flare Emissions (tpy)*	*Fugitive Landfill Emissions[7] (tpy)*	*Total Source Emissions (PTE) (tpy)*
Criteria Pollutants			
CO	80.27	1.03	**81.30**
VOC	0.19	8.08	**8.27**
NO_x[6]	41.35	N/A	**41.35**
PM_{10}	7.99	N/A	**7.99**
SO_2	2.35	N/A	**2.35**
Other Regulated Pollutants			
NMOC	0.50	20.72	**21.22**
Hazardous Air Pollutants (HAPs)			
Total HAPs	1.24	2.75	**4.00**

Notes:
1. Information taken from AP-42 Supplement D (August 1998) Sec. 2.4.
2. Values taken from Table I.
3. Control efficiencies for flares as indicated in Table 2.4-3 of AP-42 Supplement D (August 1998).
4. Assumes dichlorobenzene exists in its para isomer state (the para isomer is a Title III-listed HAP).
5. Values taken from Table 2.4-5 of AP-42 Supplement D (August 1996).
6. Because of unavailable NO_x data per AP-42 Supplement D (August 1998) Table 2.4-5, assumes NO_x is comprised only of NO_2.
7. Fugitive dust (PM_{10}) from haul roads is not required in the determination of part 70 major source applicability.

Source: C:\PROJECTS\PAGELL~1\TITLEV.PRM

Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0400 1/yr ***** User Mode Selection *****
NMOC : 924.00 ppmv ***** User Mode Selection *****
Methane : 55.0000 % volume
Carbon Dioxide : 45.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1972 Current Year : 1999 Closure Year: 2004
Capacity : 4689000 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 269331.89 Mg/year

Model Results

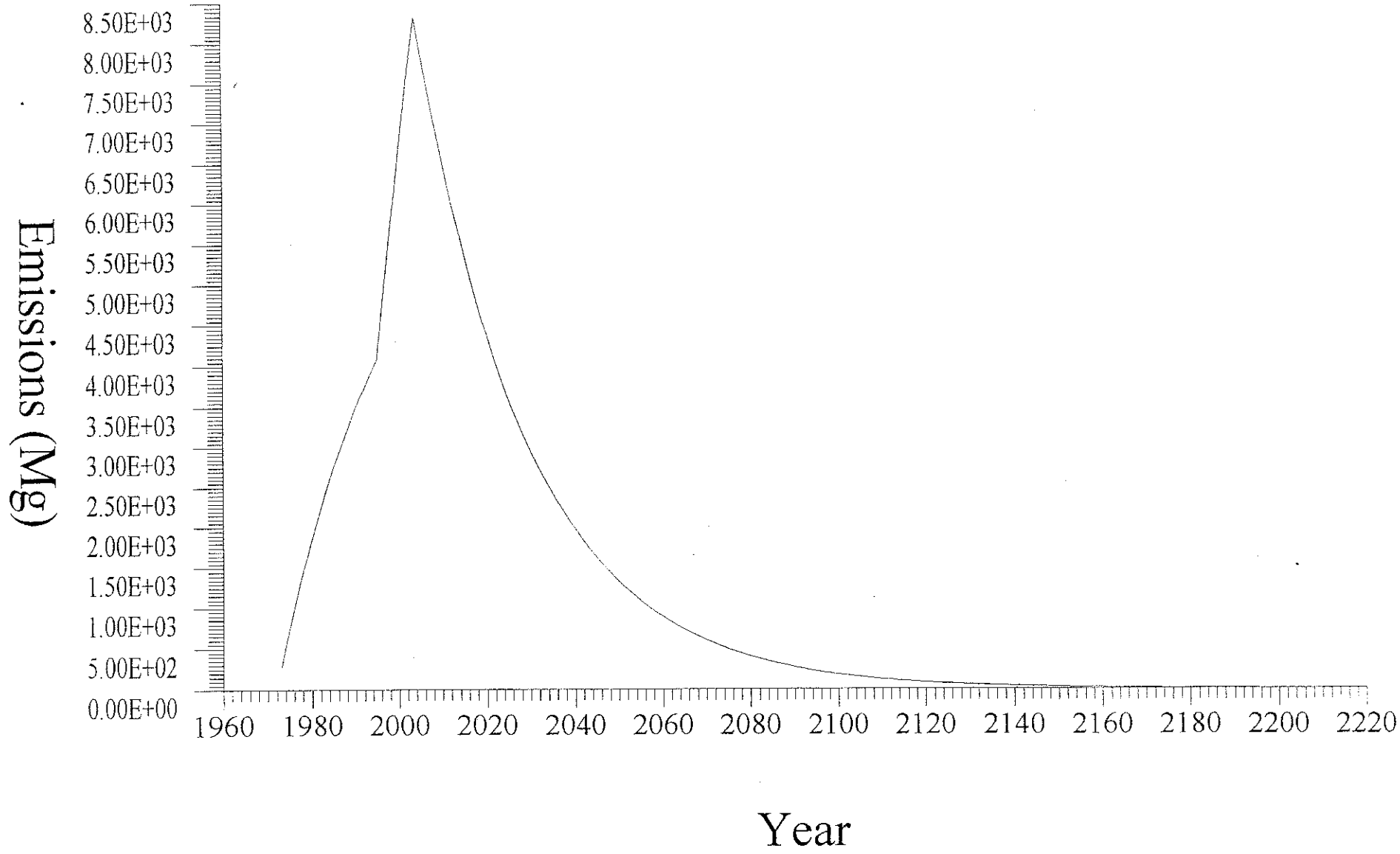
Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)
1973	9.972E+04	2.661E+02	3.989E+05
1974	1.994E+05	5.218E+02	7.821E+05
1975	2.992E+05	7.674E+02	1.150E+06
1976	3.989E+05	1.003E+03	1.504E+06
1977	4.986E+05	1.230E+03	1.844E+06
1978	5.983E+05	1.448E+03	2.171E+06
19	6.980E+05	1.657E+03	2.484E+06
19	7.977E+05	1.859E+03	2.786E+06
1981	8.975E+05	2.052E+03	3.075E+06
1982	9.972E+05	2.237E+03	3.354E+06
1983	1.097E+06	2.416E+03	3.621E+06
1984	1.197E+06	2.587E+03	3.878E+06
1985	1.296E+06	2.752E+03	4.125E+06
1986	1.396E+06	2.910E+03	4.362E+06
1987	1.496E+06	3.062E+03	4.590E+06
1988	1.595E+06	3.208E+03	4.809E+06
1989	1.695E+06	3.348E+03	5.019E+06
1990	1.795E+06	3.483E+03	5.221E+06
1991	1.895E+06	3.613E+03	5.415E+06
1992	1.994E+06	3.737E+03	5.602E+06
1993	2.094E+06	3.857E+03	5.781E+06
1994	2.194E+06	3.972E+03	5.953E+06
1995	2.294E+06	4.082E+03	6.119E+06
1996	2.537E+06	4.572E+03	6.853E+06
1997	2.801E+06	5.098E+03	7.641E+06
1998	3.077E+06	5.634E+03	8.445E+06
1999	3.342E+06	6.121E+03	9.175E+06
2000	3.612E+06	6.600E+03	9.892E+06
2001	3.881E+06	7.059E+03	1.058E+07
2002	4.150E+06	7.501E+03	1.124E+07
2003	4.420E+06	7.926E+03	1.188E+07
2004	**4.689E+06**	**8.334E+03**	***1.249E+07***
2005	4.689E+06	8.007E+03	1.200E+07
2006	4.689E+06	7.693E+03	1.153E+07
2007	4.689E+06	7.392E+03	1.108E+07
2008	4.689E+06	7.102E+03	1.064E+07
2009	4.689E+06	6.823E+03	1.023E+07
20	4.689E+06	6.556E+03	9.827E+06
20	4.689E+06	6.299E+03	9.441E+06
2012	4.689E+06	6.052E+03	9.071E+06

2013	4.689E+06	5.814E+03	8.715E+06
2	4.689E+06	5.586E+03	8.374E+06
2	4.689E+06	5.367E+03	8.045E+06
2016	4.689E+06	5.157E+03	7.730E+06
2017	4.689E+06	4.955E+03	7.427E+06
2018	4.689E+06	4.760E+03	7.136E+06
2019	4.689E+06	4.574E+03	6.856E+06
2020	4.689E+06	4.394E+03	6.587E+06
2021	4.689E+06	4.222E+03	6.329E+06
2022	4.689E+06	4.057E+03	6.080E+06
2023	4.689E+06	3.898E+03	5.842E+06
2024	4.689E+06	3.745E+03	5.613E+06
2025	4.689E+06	3.598E+03	5.393E+06
2026	4.689E+06	3.457E+03	5.181E+06
2027	4.689E+06	3.321E+03	4.978E+06
2028	4.689E+06	3.191E+03	4.783E+06
2029	4.689E+06	3.066E+03	4.596E+06
2030	4.689E+06	2.946E+03	4.415E+06
2031	4.689E+06	2.830E+03	4.242E+06
2032	4.689E+06	2.719E+03	4.076E+06
2033	4.689E+06	2.613E+03	3.916E+06
2034	4.689E+06	2.510E+03	3.763E+06
2035	4.689E+06	2.412E+03	3.615E+06
2036	4.689E+06	2.317E+03	3.473E+06
2037	4.689E+06	2.226E+03	3.337E+06
2038	4.689E+06	2.139E+03	3.206E+06
2039	4.689E+06	2.055E+03	3.080E+06
2040	4.689E+06	1.975E+03	2.960E+06
2041	4.689E+06	1.897E+03	2.844E+06
2042	4.689E+06	1.823E+03	2.732E+06
2043	4.689E+06	1.751E+03	2.625E+06
2044	4.689E+06	1.683E+03	2.522E+06
2	4.689E+06	1.617E+03	2.423E+06
20	4.689E+06	1.553E+03	2.328E+06
2047	4.689E+06	1.492E+03	2.237E+06
2048	4.689E+06	1.434E+03	2.149E+06
2049	4.689E+06	1.378E+03	2.065E+06
2050	4.689E+06	1.324E+03	1.984E+06
2051	4.689E+06	1.272E+03	1.906E+06
2052	4.689E+06	1.222E+03	1.831E+06
2053	4.689E+06	1.174E+03	1.760E+06
2054	4.689E+06	1.128E+03	1.691E+06
2055	4.689E+06	1.084E+03	1.624E+06
2056	4.689E+06	1.041E+03	1.561E+06
2057	4.689E+06	1.000E+03	1.499E+06
2058	4.689E+06	9.611E+02	1.441E+06
2059	4.689E+06	9.234E+02	1.384E+06
2060	4.689E+06	8.872E+02	1.330E+06
2061	4.689E+06	8.524E+02	1.278E+06
2062	4.689E+06	8.190E+02	1.228E+06
2063	4.689E+06	7.869E+02	1.179E+06
2064	4.689E+06	7.560E+02	1.133E+06
2065	4.689E+06	7.264E+02	1.089E+06
2066	4.689E+06	6.979E+02	1.046E+06
2067	4.689E+06	6.705E+02	1.005E+06
2068	4.689E+06	6.443E+02	9.657E+05
2069	4.689E+06	6.190E+02	9.278E+05
2070	4.689E+06	5.947E+02	8.914E+05
2071	4.689E+06	5.714E+02	8.565E+05
2072	4.689E+06	5.490E+02	8.229E+05
2073	4.689E+06	5.275E+02	7.906E+05
2074	4.689E+06	5.068E+02	7.596E+05
207	4.689E+06	4.869E+02	7.299E+05
20	4.689E+06	4.678E+02	7.012E+05
207	4.689E+06	4.495E+02	6.737E+05

2078	4.689E+06	4.319E+02	6.473E+05
2	4.689E+06	4.149E+02	6.219E+05
2	4.689E+06	3.987E+02	5.976E+05
2081	4.689E+06	3.830E+02	5.741E+05
2082	4.689E+06	3.680E+02	5.516E+05
2083	4.689E+06	3.536E+02	5.300E+05
2084	4.689E+06	3.397E+02	5.092E+05
2085	4.689E+06	3.264E+02	4.892E+05
2086	4.689E+06	3.136E+02	4.701E+05
2087	4.689E+06	3.013E+02	4.516E+05
2088	4.689E+06	2.895E+02	4.339E+05
2089	4.689E+06	2.781E+02	4.169E+05
2090	4.689E+06	2.672E+02	4.006E+05
2091	4.689E+06	2.567E+02	3.848E+05
2092	4.689E+06	2.467E+02	3.698E+05
2093	4.689E+06	2.370E+02	3.553E+05
2094	4.689E+06	2.277E+02	3.413E+05
2095	4.689E+06	2.188E+02	3.279E+05
2096	4.689E+06	2.102E+02	3.151E+05
2097	4.689E+06	2.020E+02	3.027E+05
2098	4.689E+06	1.940E+02	2.909E+05
2099	4.689E+06	1.864E+02	2.795E+05
2100	4.689E+06	1.791E+02	2.685E+05
2101	4.689E+06	1.721E+02	2.580E+05
2102	4.689E+06	1.654E+02	2.479E+05
2103	4.689E+06	1.589E+02	2.381E+05
2104	4.689E+06	1.526E+02	2.288E+05
2105	4.689E+06	1.467E+02	2.198E+05
2106	4.689E+06	1.409E+02	2.112E+05
2107	4.689E+06	1.354E+02	2.029E+05
2108	4.689E+06	1.301E+02	1.950E+05
21	4.689E+06	1.250E+02	1.873E+05
2	4.689E+06	1.201E+02	1.800E+05
2111	4.689E+06	1.154E+02	1.729E+05
2112	4.689E+06	1.108E+02	1.661E+05
2113	4.689E+06	1.065E+02	1.596E+05
2114	4.689E+06	1.023E+02	1.534E+05
2115	4.689E+06	9.831E+01	1.474E+05
2116	4.689E+06	9.445E+01	1.416E+05
2117	4.689E+06	9.075E+01	1.360E+05
2118	4.689E+06	8.719E+01	1.307E+05
2119	4.689E+06	8.377E+01	1.256E+05
2120	4.689E+06	8.049E+01	1.206E+05
2121	4.689E+06	7.733E+01	1.159E+05
2122	4.689E+06	7.430E+01	1.114E+05
2123	4.689E+06	7.139E+01	1.070E+05
2124	4.689E+06	6.859E+01	1.028E+05
2125	4.689E+06	6.590E+01	9.877E+04
2126	4.689E+06	6.331E+01	9.490E+04
2127	4.689E+06	6.083E+01	9.118E+04
2128	4.689E+06	5.845E+01	8.761E+04
2129	4.689E+06	5.615E+01	8.417E+04
2130	4.689E+06	5.395E+01	8.087E+04
2131	4.689E+06	5.184E+01	7.770E+04
2132	4.689E+06	4.980E+01	7.465E+04
2133	4.689E+06	4.785E+01	7.172E+04
2134	4.689E+06	4.597E+01	6.891E+04
2135	4.689E+06	4.417E+01	6.621E+04
2136	4.689E+06	4.244E+01	6.361E+04
2137	4.689E+06	4.078E+01	6.112E+04
2138	4.689E+06	3.918E+01	5.872E+04
2139	4.689E+06	3.764E+01	5.642E+04
21	4.689E+06	3.617E+01	5.421E+04
21	4.689E+06	3.475E+01	5.208E+04
2142	4.689E+06	3.338E+01	5.004E+04

2[illegible]	4.689E+06	3.208E+01	4.808E+04
2[illegible]	4.689E+06	3.082E+01	4.619E+04
2145	4.689E+06	2.961E+01	4.438E+04
2146	4.689E+06	2.845E+01	4.264E+04
2147	4.689E+06	2.733E+01	4.097E+04
2148	4.689E+06	2.626E+01	3.936E+04
2149	4.689E+06	2.523E+01	3.782E+04
2150	4.689E+06	2.424E+01	3.634E+04
2151	4.689E+06	2.329E+01	3.491E+04
2152	4.689E+06	2.238E+01	3.354E+04
2153	4.689E+06	2.150E+01	3.223E+04
2154	4.689E+06	2.066E+01	3.096E+04
2155	4.689E+06	1.985E+01	2.975E+04
2156	4.689E+06	1.907E+01	2.858E+04
2157	4.689E+06	1.832E+01	2.746E+04
2158	4.689E+06	1.760E+01	2.639E+04
2159	4.689E+06	1.691E+01	2.535E+04
2160	4.689E+06	1.625E+01	2.436E+04
2161	4.689E+06	1.561E+01	2.340E+04
2162	4.689E+06	1.500E+01	2.248E+04
2163	4.689E+06	1.441E+01	2.160E+04
2164	4.689E+06	1.385E+01	2.076E+04
2165	4.689E+06	1.330E+01	1.994E+04
2166	4.689E+06	1.278E+01	1.916E+04
2167	4.689E+06	1.228E+01	1.841E+04
2168	4.689E+06	1.180E+01	1.769E+04
2169	4.689E+06	1.134E+01	1.699E+04
2170	4.689E+06	1.089E+01	1.633E+04
2171	4.689E+06	1.047E+01	1.569E+04
2172	4.689E+06	1.006E+01	1.507E+04
2173	4.689E+06	9.661E+00	1.448E+04
2[illegible]	4.689E+06	9.282E+00	1.391E+04
2[illegible]	4.689E+06	8.918E+00	1.337E+04
2176	4.689E+06	8.569E+00	1.284E+04
2177	4.689E+06	8.233E+00	1.234E+04
2178	4.689E+06	7.910E+00	1.186E+04
2179	4.689E+06	7.600E+00	1.139E+04
2180	4.689E+06	7.302E+00	1.094E+04
2181	4.689E+06	7.015E+00	1.052E+04
2182	4.689E+06	6.740E+00	1.010E+04
2183	4.689E+06	6.476E+00	9.707E+03
2184	4.689E+06	6.222E+00	9.326E+03
2185	4.689E+06	5.978E+00	8.961E+03
2186	4.689E+06	5.744E+00	8.609E+03
2187	4.689E+06	5.518E+00	8.272E+03
2188	4.689E+06	5.302E+00	7.947E+03
2189	4.689E+06	5.094E+00	7.636E+03
2190	4.689E+06	4.894E+00	7.336E+03
2191	4.689E+06	4.703E+00	7.049E+03
2192	4.689E+06	4.518E+00	6.772E+03
2193	4.689E+06	4.341E+00	6.507E+03
2194	4.689E+06	4.171E+00	6.252E+03
2195	4.689E+06	4.007E+00	6.006E+03
2196	4.689E+06	3.850E+00	5.771E+03
2197	4.689E+06	3.699E+00	5.545E+03
2198	4.689E+06	3.554E+00	5.327E+03
2199	4.689E+06	3.415E+00	5.118E+03
2200	4.689E+06	3.281E+00	4.918E+03
2201	4.689E+06	3.152E+00	4.725E+03
2202	4.689E+06	3.029E+00	4.540E+03
2203	4.689E+06	2.910E+00	4.362E+03

Projected Methane Emissions



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Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0400 1/yr ***** User Mode Selection *****
NMOC : 924.00 ppmv ***** User Mode Selection *****
Methane : 55.0000 % volume
Carbon Dioxide : 45.0000 % volume
Air Pollutant : Carbon Monoxide
Molecular Wt = 28.01 Concentration = 141.000000 ppmV

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1972 Current Year : 1999 Closure Year: 2004
Capacity : 4689000 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 269331.89 Mg/year

Model Results

Year	Refuse In Place (Mg)	Carbon Monoxide Emission Rate (Mg/yr)	(Cubic m/yr)
1973	9.972E+04	1.191E-01	1.023E+02
1974	1.994E+05	2.336E-01	2.005E+02
1975	2.992E+05	3.436E-01	2.949E+02
1976	3.989E+05	4.492E-01	3.856E+02
19	4.986E+05	5.507E-01	4.727E+02
19	5.983E+05	6.483E-01	5.564E+02
1979	6.980E+05	7.420E-01	6.369E+02
1980	7.977E+05	8.320E-01	7.142E+02
1981	8.975E+05	9.185E-01	7.884E+02
1982	9.972E+05	1.002E+00	8.598E+02
1983	1.097E+06	1.081E+00	9.283E+02
1984	1.197E+06	1.158E+00	9.942E+02
1985	1.296E+06	1.232E+00	1.057E+03
1986	1.396E+06	1.303E+00	1.118E+03
1987	1.496E+06	1.371E+00	1.177E+03
1988	1.595E+06	1.436E+00	1.233E+03
1989	1.695E+06	1.499E+00	1.287E+03
1990	1.795E+06	1.559E+00	1.338E+03
1991	1.895E+06	1.617E+00	1.388E+03
1992	1.994E+06	1.673E+00	1.436E+03
1993	2.094E+06	1.727E+00	1.482E+03
1994	2.194E+06	1.778E+00	1.526E+03
1995	2.294E+06	1.827E+00	1.569E+03
1996	2.537E+06	2.047E+00	1.757E+03
1997	2.801E+06	2.282E+00	1.959E+03
1998	3.077E+06	2.522E+00	2.165E+03
1999	3.342E+06	2.740E+00	2.352E+03
2000	3.612E+06	2.954E+00	2.536E+03
2001	3.881E+06	3.160E+00	2.713E+03
2002	4.150E+06	3.358E+00	2.883E+03
2003	4.420E+06	3.548E+00	3.046E+03
2004	**4.689E+06**	***3.731E+00***	**3.202E+03**
2005	4.689E+06	3.585E+00	3.077E+03
2006	4.689E+06	3.444E+00	2.956E+03
2007	4.689E+06	3.309E+00	2.840E+03
20	4.689E+06	3.179E+00	2.729E+03
20	4.689E+06	3.055E+00	2.622E+03
2010	4.689E+06	2.935E+00	2.519E+03

20[illegible]	4.689E+06	2.820E+00	2.420E+03
2[illegible]	4.689E+06	2.709E+00	2.325E+03
2013	4.689E+06	2.603E+00	2.234E+03
2014	4.689E+06	2.501E+00	2.147E+03
2015	4.689E+06	2.403E+00	2.063E+03
2016	4.689E+06	2.309E+00	1.982E+03
2017	4.689E+06	2.218E+00	1.904E+03
2018	4.689E+06	2.131E+00	1.829E+03
2019	4.689E+06	2.048E+00	1.758E+03
2020	4.689E+06	1.967E+00	1.689E+03
2021	4.689E+06	1.890E+00	1.622E+03
2022	4.689E+06	1.816E+00	1.559E+03
2023	4.689E+06	1.745E+00	1.498E+03
2024	4.689E+06	1.676E+00	1.439E+03
2025	4.689E+06	1.611E+00	1.383E+03
2026	4.689E+06	1.548E+00	1.328E+03
2027	4.689E+06	1.487E+00	1.276E+03
2028	4.689E+06	1.429E+00	1.226E+03
2029	4.689E+06	1.373E+00	1.178E+03
2030	4.689E+06	1.319E+00	1.132E+03
2031	4.689E+06	1.267E+00	1.088E+03
2032	4.689E+06	1.217E+00	1.045E+03
2033	4.689E+06	1.170E+00	1.004E+03
2034	4.689E+06	1.124E+00	9.646E+02
2035	4.689E+06	1.080E+00	9.267E+02
2036	4.689E+06	1.037E+00	8.904E+02
2037	4.689E+06	9.967E-01	8.555E+02
2038	4.689E+06	9.576E-01	8.220E+02
2039	4.689E+06	9.200E-01	7.897E+02
2040	4.689E+06	8.840E-01	7.588E+02
2041	4.689E+06	8.493E-01	7.290E+02
20[illegible]	4.689E+06	8.160E-01	7.004E+02
20[illegible]	4.689E+06	7.840E-01	6.730E+02
2044	4.689E+06	7.533E-01	6.466E+02
2045	4.689E+06	7.237E-01	6.212E+02
2046	4.689E+06	6.953E-01	5.969E+02
2047	4.689E+06	6.681E-01	5.735E+02
2048	4.689E+06	6.419E-01	5.510E+02
2049	4.689E+06	6.167E-01	5.294E+02
2050	4.689E+06	5.925E-01	5.086E+02
2051	4.689E+06	5.693E-01	4.887E+02
2052	4.689E+06	5.470E-01	4.695E+02
2053	4.689E+06	5.255E-01	4.511E+02
2054	4.689E+06	5.049E-01	4.334E+02
2055	4.689E+06	4.851E-01	4.164E+02
2056	4.689E+06	4.661E-01	4.001E+02
2057	4.689E+06	4.478E-01	3.844E+02
2058	4.689E+06	4.303E-01	3.693E+02
2059	4.689E+06	4.134E-01	3.548E+02
2060	4.689E+06	3.972E-01	3.409E+02
2061	4.689E+06	3.816E-01	3.276E+02
2062	4.689E+06	3.667E-01	3.147E+02
2063	4.689E+06	3.523E-01	3.024E+02
2064	4.689E+06	3.385E-01	2.905E+02
2065	4.689E+06	3.252E-01	2.791E+02
2066	4.689E+06	3.124E-01	2.682E+02
2067	4.689E+06	3.002E-01	2.577E+02
2068	4.689E+06	2.884E-01	2.476E+02
2069	4.689E+06	2.771E-01	2.379E+02
2070	4.689E+06	2.662E-01	2.285E+02
2071	4.689E+06	2.558E-01	2.196E+02
2072	4.689E+06	2.458E-01	2.110E+02
20[illegible]	4.689E+06	2.361E-01	2.027E+02
20[illegible]	4.689E+06	2.269E-01	1.947E+02
2075	4.689E+06	2.180E-01	1.871E+02

207[illegible]	4.689E+06	2.094E-01	1.798E+02
2[illegible]	4.689E+06	2.012E-01	1.727E+02
207[illegible]	4.689E+06	1.933E-01	1.659E+02
2079	4.689E+06	1.858E-01	1.594E+02
2080	4.689E+06	1.785E-01	1.532E+02
2081	4.689E+06	1.715E-01	1.472E+02
2082	4.689E+06	1.647E-01	1.414E+02
2083	4.689E+06	1.583E-01	1.359E+02
2084	4.689E+06	1.521E-01	1.305E+02
2085	4.689E+06	1.461E-01	1.254E+02
2086	4.689E+06	1.404E-01	1.205E+02
2087	4.689E+06	1.349E-01	1.158E+02
2088	4.689E+06	1.296E-01	1.112E+02
2089	4.689E+06	1.245E-01	1.069E+02
2090	4.689E+06	1.196E-01	1.027E+02
2091	4.689E+06	1.149E-01	9.866E+01
2092	4.689E+06	1.104E-01	9.479E+01
2093	4.689E+06	1.061E-01	9.107E+01
2094	4.689E+06	1.019E-01	8.750E+01
2095	4.689E+06	9.795E-02	8.407E+01
2096	4.689E+06	9.411E-02	8.078E+01
2097	4.689E+06	9.042E-02	7.761E+01
2098	4.689E+06	8.687E-02	7.457E+01
2099	4.689E+06	8.346E-02	7.164E+01
2100	4.689E+06	8.019E-02	6.883E+01
2101	4.689E+06	7.705E-02	6.613E+01
2102	4.689E+06	7.403E-02	6.354E+01
2103	4.689E+06	7.112E-02	6.105E+01
2104	4.689E+06	6.833E-02	5.866E+01
2105	4.689E+06	6.566E-02	5.636E+01
2106	4.689E+06	6.308E-02	5.415E+01
21[illegible]	4.689E+06	6.061E-02	5.202E+01
21[illegible]	4.689E+06	5.823E-02	4.998E+01
2109	4.689E+06	5.595E-02	4.802E+01
2110	4.689E+06	5.375E-02	4.614E+01
2111	4.689E+06	5.165E-02	4.433E+01
2112	4.689E+06	4.962E-02	4.259E+01
2113	4.689E+06	4.768E-02	4.092E+01
2114	4.689E+06	4.581E-02	3.932E+01
2115	4.689E+06	4.401E-02	3.778E+01
2116	4.689E+06	4.228E-02	3.630E+01
2117	4.689E+06	4.063E-02	3.487E+01
2118	4.689E+06	3.903E-02	3.350E+01
2119	4.689E+06	3.750E-02	3.219E+01
2120	4.689E+06	3.603E-02	3.093E+01
2121	4.689E+06	3.462E-02	2.972E+01
2122	4.689E+06	3.326E-02	2.855E+01
2123	4.689E+06	3.196E-02	2.743E+01
2124	4.689E+06	3.070E-02	2.636E+01
2125	4.689E+06	2.950E-02	2.532E+01
2126	4.689E+06	2.834E-02	2.433E+01
2127	4.689E+06	2.723E-02	2.338E+01
2128	4.689E+06	2.616E-02	2.246E+01
2129	4.689E+06	2.514E-02	2.158E+01
2130	4.689E+06	2.415E-02	2.073E+01
2131	4.689E+06	2.321E-02	1.992E+01
2132	4.689E+06	2.230E-02	1.914E+01
2133	4.689E+06	2.142E-02	1.839E+01
2134	4.689E+06	2.058E-02	1.767E+01
2135	4.689E+06	1.977E-02	1.697E+01
2136	4.689E+06	1.900E-02	1.631E+01
2137	4.689E+06	1.825E-02	1.567E+01
21[illegible]	4.689E+06	1.754E-02	1.505E+01
21[illegible]	4.689E+06	1.685E-02	1.446E+01
2140	4.689E+06	1.619E-02	1.390E+01

21	4.689E+06	1.556E-02	1.335E+01
2-	4.689E+06	1.495E-02	1.283E+01
2143	4.689E+06	1.436E-02	1.233E+01
2144	4.689E+06	1.380E-02	1.184E+01
2145	4.689E+06	1.326E-02	1.138E+01
2146	4.689E+06	1.274E-02	1.093E+01
2147	4.689E+06	1.224E-02	1.050E+01
2148	4.689E+06	1.176E-02	1.009E+01
2149	4.689E+06	1.130E-02	9.696E+00
2150	4.689E+06	1.085E-02	9.316E+00
2151	4.689E+06	1.043E-02	8.950E+00
2152	4.689E+06	1.002E-02	8.599E+00
2153	4.689E+06	9.625E-03	8.262E+00
2154	4.689E+06	9.248E-03	7.938E+00
2155	4.689E+06	8.885E-03	7.627E+00
2156	4.689E+06	8.537E-03	7.328E+00
2157	4.689E+06	8.202E-03	7.041E+00
2158	4.689E+06	7.881E-03	6.764E+00
2159	4.689E+06	7.572E-03	6.499E+00
2160	4.689E+06	7.275E-03	6.244E+00
2161	4.689E+06	6.990E-03	6.000E+00
2162	4.689E+06	6.715E-03	5.764E+00
2163	4.689E+06	6.452E-03	5.538E+00
2164	4.689E+06	6.199E-03	5.321E+00
2165	4.689E+06	5.956E-03	5.112E+00
2166	4.689E+06	5.723E-03	4.912E+00
2167	4.689E+06	5.498E-03	4.719E+00
2168	4.689E+06	5.283E-03	4.534E+00
2169	4.689E+06	5.075E-03	4.357E+00
2170	4.689E+06	4.876E-03	4.186E+00
2171	4.689E+06	4.685E-03	4.022E+00
2J	4.689E+06	4.502E-03	3.864E+00
21	4.689E+06	4.325E-03	3.712E+00
2174	4.689E+06	4.155E-03	3.567E+00
2175	4.689E+06	3.992E-03	3.427E+00
2176	4.689E+06	3.836E-03	3.293E+00
2177	4.689E+06	3.686E-03	3.164E+00
2178	4.689E+06	3.541E-03	3.039E+00
2179	4.689E+06	3.402E-03	2.920E+00
2180	4.689E+06	3.269E-03	2.806E+00
2181	4.689E+06	3.141E-03	2.696E+00
2182	4.689E+06	3.017E-03	2.590E+00
2183	4.689E+06	2.899E-03	2.489E+00
2184	4.689E+06	2.785E-03	2.391E+00
2185	4.689E+06	2.676E-03	2.297E+00
2186	4.689E+06	2.571E-03	2.207E+00
2187	4.689E+06	2.470E-03	2.121E+00
2188	4.689E+06	2.374E-03	2.037E+00
2189	4.689E+06	2.281E-03	1.958E+00
2190	4.689E+06	2.191E-03	1.881E+00
2191	4.689E+06	2.105E-03	1.807E+00
2192	4.689E+06	2.023E-03	1.736E+00
2193	4.689E+06	1.943E-03	1.668E+00
2194	4.689E+06	1.867E-03	1.603E+00
2195	4.689E+06	1.794E-03	1.540E+00
2196	4.689E+06	1.724E-03	1.479E+00
2197	4.689E+06	1.656E-03	1.421E+00
2198	4.689E+06	1.591E-03	1.366E+00
2199	4.689E+06	1.529E-03	1.312E+00
2200	4.689E+06	1.469E-03	1.261E+00
2201	4.689E+06	1.411E-03	1.211E+00
2202	4.689E+06	1.356E-03	1.164E+00
22	4.689E+06	1.303E-03	1.118E+00

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Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0400 1/yr ***** User Mode Selection *****
NMOC : 924.00 ppmv ***** User Mode Selection *****
Methane : 55.0000 % volume
Carbon Dioxide : 45.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1972 Current Year : 1999 Closure Year: 2004
Capacity : 4689000 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 269331.89 Mg/year

Model Results

Year	Refuse In Place (Mg)	NMOC Emission Rate (Mg/yr)	NMOC Emission Rate (Cubic m/yr)
1973	9.972E+04	2.402E+00	6.701E+02
1974	1.994E+05	4.710E+00	1.314E+03
1975	2.992E+05	6.927E+00	1.933E+03
1976	3.989E+05	9.057E+00	2.527E+03
1977	4.986E+05	1.110E+01	3.098E+03
1978	5.983E+05	1.307E+01	3.647E+03
19	6.980E+05	1.496E+01	4.174E+03
19	7.977E+05	1.678E+01	4.680E+03
1981	8.975E+05	1.852E+01	5.167E+03
1982	9.972E+05	2.020E+01	5.634E+03
1983	1.097E+06	2.181E+01	6.083E+03
1984	1.197E+06	2.335E+01	6.515E+03
1985	1.296E+06	2.484E+01	6.930E+03
1986	1.396E+06	2.627E+01	7.328E+03
1987	1.496E+06	2.764E+01	7.711E+03
1988	1.595E+06	2.896E+01	8.079E+03
1989	1.695E+06	3.022E+01	8.432E+03
1990	1.795E+06	3.144E+01	8.771E+03
1991	1.895E+06	3.261E+01	9.098E+03
1992	1.994E+06	3.373E+01	9.411E+03
1993	2.094E+06	3.481E+01	9.712E+03
1994	2.194E+06	3.585E+01	1.000E+04
1995	2.294E+06	3.685E+01	1.028E+04
1996	2.537E+06	4.127E+01	1.151E+04
1997	2.801E+06	4.601E+01	1.284E+04
1998	3.077E+06	5.086E+01	1.419E+04
1999	3.342E+06	5.525E+01	1.541E+04
2000	3.612E+06	5.957E+01	1.662E+04
2001	3.881E+06	6.372E+01	1.778E+04
2002	4.150E+06	6.771E+01	1.889E+04
2003	4.420E+06	7.154E+01	1.996E+04
2004	**4.689E+06**	***7.523E+01***	**2.099E+04**
2005	4.689E+06	7.228E+01	2.016E+04
2006	4.689E+06	6.944E+01	1.937E+04
2007	4.689E+06	6.672E+01	1.861E+04
2008	4.689E+06	6.410E+01	1.788E+04
2009	4.689E+06	6.159E+01	1.718E+04
20	4.689E+06	5.917E+01	1.651E+04
20	4.689E+06	5.685E+01	1.586E+04
2012	4.689E+06	5.462E+01	1.524E+04

20[illegible]	4.689E+06	5.248E+01	1.464E+04
2[illegible]	4.689E+06	5.043E+01	1.407E+04
2015	4.689E+06	4.845E+01	1.352E+04
2016	4.689E+06	4.655E+01	1.299E+04
2017	4.689E+06	4.472E+01	1.248E+04
2018	4.689E+06	4.297E+01	1.199E+04
2019	4.689E+06	4.128E+01	1.152E+04
2020	4.689E+06	3.967E+01	1.107E+04
2021	4.689E+06	3.811E+01	1.063E+04
2022	4.689E+06	3.662E+01	1.022E+04
2023	4.689E+06	3.518E+01	9.815E+03
2024	4.689E+06	3.380E+01	9.430E+03
2025	4.689E+06	3.248E+01	9.060E+03
2026	4.689E+06	3.120E+01	8.705E+03
2027	4.689E+06	2.998E+01	8.364E+03
2028	4.689E+06	2.880E+01	8.036E+03
2029	4.689E+06	2.767E+01	7.720E+03
2030	4.689E+06	2.659E+01	7.418E+03
2031	4.689E+06	2.555E+01	7.127E+03
2032	4.689E+06	2.454E+01	6.847E+03
2033	4.689E+06	2.358E+01	6.579E+03
2034	4.689E+06	2.266E+01	6.321E+03
2035	4.689E+06	2.177E+01	6.073E+03
2036	4.689E+06	2.092E+01	5.835E+03
2037	4.689E+06	2.010E+01	5.606E+03
2038	4.689E+06	1.931E+01	5.386E+03
2039	4.689E+06	1.855E+01	5.175E+03
2040	4.689E+06	1.782E+01	4.972E+03
2041	4.689E+06	1.712E+01	4.777E+03
2042	4.689E+06	1.645E+01	4.590E+03
2043	4.689E+06	1.581E+01	4.410E+03
20[illegible]	4.689E+06	1.519E+01	4.237E+03
20[illegible]	4.689E+06	1.459E+01	4.071E+03
2046	4.689E+06	1.402E+01	3.911E+03
2047	4.689E+06	1.347E+01	3.758E+03
2048	4.689E+06	1.294E+01	3.611E+03
2049	4.689E+06	1.243E+01	3.469E+03
2050	4.689E+06	1.195E+01	3.333E+03
2051	4.689E+06	1.148E+01	3.202E+03
2052	4.689E+06	1.103E+01	3.077E+03
2053	4.689E+06	1.060E+01	2.956E+03
2054	4.689E+06	1.018E+01	2.840E+03
2055	4.689E+06	9.781E+00	2.729E+03
2056	4.689E+06	9.398E+00	2.622E+03
2057	4.689E+06	9.029E+00	2.519E+03
2058	4.689E+06	8.675E+00	2.420E+03
2059	4.689E+06	8.335E+00	2.325E+03
2060	4.689E+06	8.008E+00	2.234E+03
2061	4.689E+06	7.694E+00	2.147E+03
2062	4.689E+06	7.393E+00	2.062E+03
2063	4.689E+06	7.103E+00	1.982E+03
2064	4.689E+06	6.824E+00	1.904E+03
2065	4.689E+06	6.557E+00	1.829E+03
2066	4.689E+06	6.300E+00	1.757E+03
2067	4.689E+06	6.053E+00	1.689E+03
2068	4.689E+06	5.815E+00	1.622E+03
2069	4.689E+06	5.587E+00	1.559E+03
2070	4.689E+06	5.368E+00	1.498E+03
2071	4.689E+06	5.158E+00	1.439E+03
2072	4.689E+06	4.955E+00	1.382E+03
2073	4.689E+06	4.761E+00	1.328E+03
2074	4.689E+06	4.574E+00	1.276E+03
20[illegible]	4.689E+06	4.395E+00	1.226E+03
20[illegible]	4.689E+06	4.223E+00	1.178E+03
2077	4.689E+06	4.057E+00	1.132E+03

20	4.689E+06	3.898E+00	1.087E+03
20	4.689E+06	3.745E+00	1.045E+03
2080	4.689E+06	3.598E+00	1.004E+03
2081	4.689E+06	3.457E+00	9.645E+02
2082	4.689E+06	3.322E+00	9.267E+02
2083	4.689E+06	3.191E+00	8.904E+02
2084	4.689E+06	3.066E+00	8.555E+02
2085	4.689E+06	2.946E+00	8.219E+02
2086	4.689E+06	2.831E+00	7.897E+02
2087	4.689E+06	2.720E+00	7.587E+02
2088	4.689E+06	2.613E+00	7.290E+02
2089	4.689E+06	2.511E+00	7.004E+02
2090	4.689E+06	2.412E+00	6.729E+02
2091	4.689E+06	2.317E+00	6.465E+02
2092	4.689E+06	2.227E+00	6.212E+02
2093	4.689E+06	2.139E+00	5.968E+02
2094	4.689E+06	2.055E+00	5.734E+02
2095	4.689E+06	1.975E+00	5.509E+02
2096	4.689E+06	1.897E+00	5.293E+02
2097	4.689E+06	1.823E+00	5.086E+02
2098	4.689E+06	1.752E+00	4.886E+02
2099	4.689E+06	1.683E+00	4.695E+02
2100	4.689E+06	1.617E+00	4.511E+02
2101	4.689E+06	1.553E+00	4.334E+02
2102	4.689E+06	1.493E+00	4.164E+02
2103	4.689E+06	1.434E+00	4.001E+02
2104	4.689E+06	1.378E+00	3.844E+02
2105	4.689E+06	1.324E+00	3.693E+02
2106	4.689E+06	1.272E+00	3.548E+02
2107	4.689E+06	1.222E+00	3.409E+02
2108	4.689E+06	1.174E+00	3.275E+02
21	4.689E+06	1.128E+00	3.147E+02
21	4.689E+06	1.084E+00	3.024E+02
2111	4.689E+06	1.041E+00	2.905E+02
2112	4.689E+06	1.000E+00	2.791E+02
2113	4.689E+06	9.613E-01	2.682E+02
2114	4.689E+06	9.236E-01	2.577E+02
2115	4.689E+06	8.874E-01	2.476E+02
2116	4.689E+06	8.526E-01	2.378E+02
2117	4.689E+06	8.191E-01	2.285E+02
2118	4.689E+06	7.870E-01	2.196E+02
2119	4.689E+06	7.562E-01	2.110E+02
2120	4.689E+06	7.265E-01	2.027E+02
2121	4.689E+06	6.980E-01	1.947E+02
2122	4.689E+06	6.706E-01	1.871E+02
2123	4.689E+06	6.444E-01	1.798E+02
2124	4.689E+06	6.191E-01	1.727E+02
2125	4.689E+06	5.948E-01	1.659E+02
2126	4.689E+06	5.715E-01	1.594E+02
2127	4.689E+06	5.491E-01	1.532E+02
2128	4.689E+06	5.275E-01	1.472E+02
2129	4.689E+06	5.069E-01	1.414E+02
2130	4.689E+06	4.870E-01	1.359E+02
2131	4.689E+06	4.679E-01	1.305E+02
2132	4.689E+06	4.495E-01	1.254E+02
2133	4.689E+06	4.319E-01	1.205E+02
2134	4.689E+06	4.150E-01	1.158E+02
2135	4.689E+06	3.987E-01	1.112E+02
2136	4.689E+06	3.831E-01	1.069E+02
2137	4.689E+06	3.681E-01	1.027E+02
2138	4.689E+06	3.536E-01	9.866E+01
2139	4.689E+06	3.398E-01	9.479E+01
21	4.689E+06	3.264E-01	9.107E+01
21	4.689E+06	3.136E-01	8.750E+01
2142	4.689E+06	3.013E-01	8.407E+01

214	4.689E+06	2.895E-01	8.077E+01
21	4.689E+06	2.782E-01	7.761E+01
2145	4.689E+06	2.673E-01	7.456E+01
2146	4.689E+06	2.568E-01	7.164E+01
2147	4.689E+06	2.467E-01	6.883E+01
2148	4.689E+06	2.370E-01	6.613E+01
2149	4.689E+06	2.277E-01	6.354E+01
2150	4.689E+06	2.188E-01	6.105E+01
2151	4.689E+06	2.102E-01	5.865E+01
2152	4.689E+06	2.020E-01	5.635E+01
2153	4.689E+06	1.941E-01	5.414E+01
2154	4.689E+06	1.865E-01	5.202E+01
2155	4.689E+06	1.792E-01	4.998E+01
2156	4.689E+06	1.721E-01	4.802E+01
2157	4.689E+06	1.654E-01	4.614E+01
2158	4.689E+06	1.589E-01	4.433E+01
2159	4.689E+06	1.527E-01	4.259E+01
2160	4.689E+06	1.467E-01	4.092E+01
2161	4.689E+06	1.409E-01	3.932E+01
2162	4.689E+06	1.354E-01	3.777E+01
2163	4.689E+06	1.301E-01	3.629E+01
2164	4.689E+06	1.250E-01	3.487E+01
2165	4.689E+06	1.201E-01	3.350E+01
2166	4.689E+06	1.154E-01	3.219E+01
2167	4.689E+06	1.109E-01	3.093E+01
2168	4.689E+06	1.065E-01	2.971E+01
2169	4.689E+06	1.023E-01	2.855E+01
2170	4.689E+06	9.832E-02	2.743E+01
2171	4.689E+06	9.447E-02	2.635E+01
2172	4.689E+06	9.076E-02	2.532E+01
2173	4.689E+06	8.720E-02	2.433E+01
217	4.689E+06	8.378E-02	2.337E+01
21	4.689E+06	8.050E-02	2.246E+01
2176	4.689E+06	7.734E-02	2.158E+01
2177	4.689E+06	7.431E-02	2.073E+01
2178	4.689E+06	7.140E-02	1.992E+01
2179	4.689E+06	6.860E-02	1.914E+01
2180	4.689E+06	6.591E-02	1.839E+01
2181	4.689E+06	6.332E-02	1.767E+01
2182	4.689E+06	6.084E-02	1.697E+01
2183	4.689E+06	5.845E-02	1.631E+01
2184	4.689E+06	5.616E-02	1.567E+01
2185	4.689E+06	5.396E-02	1.505E+01
2186	4.689E+06	5.184E-02	1.446E+01
2187	4.689E+06	4.981E-02	1.390E+01
2188	4.689E+06	4.786E-02	1.335E+01
2189	4.689E+06	4.598E-02	1.283E+01
2190	4.689E+06	4.418E-02	1.233E+01
2191	4.689E+06	4.245E-02	1.184E+01
2192	4.689E+06	4.078E-02	1.138E+01
2193	4.689E+06	3.918E-02	1.093E+01
2194	4.689E+06	3.765E-02	1.050E+01
2195	4.689E+06	3.617E-02	1.009E+01
2196	4.689E+06	3.475E-02	9.695E+00
2197	4.689E+06	3.339E-02	9.315E+00
2198	4.689E+06	3.208E-02	8.950E+00
2199	4.689E+06	3.082E-02	8.599E+00
2200	4.689E+06	2.961E-02	8.262E+00
2201	4.689E+06	2.845E-02	7.938E+00
2202	4.689E+06	2.734E-02	7.627E+00
2203	4.689E+06	2.627E-02	7.327E+00

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Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0400 1/yr ***** User Mode Selection *****
NMOC : 924.00 ppmv ***** User Mode Selection *****
Methane : 55.0000 % volume
Carbon Dioxide : 45.0000 % volume
Air Pollutant : VOCs (based on Tier 2 NMOC of 924 ppmv)
Molecular Wt = 86.18 Concentration = 360.360000 ppmV

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1972 Current Year : 1999 Closure Year: 2004
Capacity : 4689000 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 269331.89 Mg/year

Model Results

Year	Refuse In Place (Mg)	VOCs (based on Tier 2 NMOC of 924 ppmv) (Mg/yr)	Emission R (Cubic m/yr)
1973	9.972E+04	9.368E-01	2.613E+02
1974	1.994E+05	1.837E+00	5.124E+02
1975	2.992E+05	2.702E+00	7.537E+02
1976	3.989E+05	3.532E+00	9.855E+02
19[illegible]	4.986E+05	4.331E+00	1.208E+03
1[illegible]	5.983E+05	5.098E+00	1.422E+03
1979	6.980E+05	5.834E+00	1.628E+03
1980	7.977E+05	6.542E+00	1.825E+03
1981	8.975E+05	7.223E+00	2.015E+03
1982	9.972E+05	7.876E+00	2.197E+03
1983	1.097E+06	8.504E+00	2.373E+03
1984	1.197E+06	9.108E+00	2.541E+03
1985	1.296E+06	9.687E+00	2.703E+03
1986	1.396E+06	1.024E+01	2.858E+03
1987	1.496E+06	1.078E+01	3.007E+03
1988	1.595E+06	1.129E+01	3.151E+03
1989	1.695E+06	1.179E+01	3.288E+03
1990	1.795E+06	1.226E+01	3.421E+03
1991	1.895E+06	1.272E+01	3.548E+03
1992	1.994E+06	1.316E+01	3.670E+03
1993	2.094E+06	1.358E+01	3.788E+03
1994	2.194E+06	1.398E+01	3.901E+03
1995	2.294E+06	1.437E+01	4.009E+03
1996	2.537E+06	1.609E+01	4.490E+03
1997	2.801E+06	1.795E+01	5.006E+03
1998	3.077E+06	1.983E+01	5.533E+03
1999	3.342E+06	2.155E+01	6.011E+03
2000	3.612E+06	2.323E+01	6.481E+03
2001	3.881E+06	2.485E+01	6.933E+03
2002	4.150E+06	2.641E+01	7.367E+03
2003	4.420E+06	2.790E+01	7.784E+03
2004	**4.689E+06**	***2.934E+01***	**8.185E+03**
2005	4.689E+06	2.819E+01	7.864E+03
2006	4.689E+06	2.708E+01	7.555E+03
2007	4.689E+06	2.602E+01	7.259E+03
20[illegible]	4.689E+06	2.500E+01	6.975E+03
20[illegible]	4.689E+06	2.402E+01	6.701E+03
2010	4.689E+06	2.308E+01	6.438E+03

20[illegible]	4.689E+06	2.217E+01	6.186E+03
2[illegible]	4.689E+06	2.130E+01	5.943E+03
20[illegible]	4.689E+06	2.047E+01	5.710E+03
2014	4.689E+06	1.967E+01	5.486E+03
2015	4.689E+06	1.889E+01	5.271E+03
2016	4.689E+06	1.815E+01	5.065E+03
2017	4.689E+06	1.744E+01	4.866E+03
2018	4.689E+06	1.676E+01	4.675E+03
2019	4.689E+06	1.610E+01	4.492E+03
2020	4.689E+06	1.547E+01	4.316E+03
2021	4.689E+06	1.486E+01	4.147E+03
2022	4.689E+06	1.428E+01	3.984E+03
2023	4.689E+06	1.372E+01	3.828E+03
2024	4.689E+06	1.318E+01	3.678E+03
2025	4.689E+06	1.267E+01	3.533E+03
2026	4.689E+06	1.217E+01	3.395E+03
2027	4.689E+06	1.169E+01	3.262E+03
2028	4.689E+06	1.123E+01	3.134E+03
2029	4.689E+06	1.079E+01	3.011E+03
2030	4.689E+06	1.037E+01	2.893E+03
2031	4.689E+06	9.963E+00	2.779E+03
2032	4.689E+06	9.572E+00	2.671E+03
2033	4.689E+06	9.197E+00	2.566E+03
2034	4.689E+06	8.836E+00	2.465E+03
2035	4.689E+06	8.490E+00	2.369E+03
2036	4.689E+06	8.157E+00	2.276E+03
2037	4.689E+06	7.837E+00	2.186E+03
2038	4.689E+06	7.530E+00	2.101E+03
2039	4.689E+06	7.235E+00	2.018E+03
2040	4.689E+06	6.951E+00	1.939E+03
2041	4.689E+06	6.678E+00	1.863E+03
20[illegible]	4.689E+06	6.417E+00	1.790E+03
20[illegible]	4.689E+06	6.165E+00	1.720E+03
2044	4.689E+06	5.923E+00	1.652E+03
2045	4.689E+06	5.691E+00	1.588E+03
2046	4.689E+06	5.468E+00	1.525E+03
2047	4.689E+06	5.253E+00	1.466E+03
2048	4.689E+06	5.047E+00	1.408E+03
2049	4.689E+06	4.850E+00	1.353E+03
2050	4.689E+06	4.659E+00	1.300E+03
2051	4.689E+06	4.477E+00	1.249E+03
2052	4.689E+06	4.301E+00	1.200E+03
2053	4.689E+06	4.132E+00	1.153E+03
2054	4.689E+06	3.970E+00	1.108E+03
2055	4.689E+06	3.815E+00	1.064E+03
2056	4.689E+06	3.665E+00	1.023E+03
2057	4.689E+06	3.521E+00	9.824E+02
2058	4.689E+06	3.383E+00	9.439E+02
2059	4.689E+06	3.251E+00	9.069E+02
2060	4.689E+06	3.123E+00	8.713E+02
2061	4.689E+06	3.001E+00	8.372E+02
2062	4.689E+06	2.883E+00	8.043E+02
2063	4.689E+06	2.770E+00	7.728E+02
2064	4.689E+06	2.661E+00	7.425E+02
2065	4.689E+06	2.557E+00	7.134E+02
2066	4.689E+06	2.457E+00	6.854E+02
2067	4.689E+06	2.361E+00	6.585E+02
2068	4.689E+06	2.268E+00	6.327E+02
2069	4.689E+06	2.179E+00	6.079E+02
2070	4.689E+06	2.094E+00	5.841E+02
2071	4.689E+06	2.011E+00	5.612E+02
2072	4.689E+06	1.933E+00	5.392E+02
20[illegible]	4.689E+06	1.857E+00	5.180E+02
20[illegible]	4.689E+06	1.784E+00	4.977E+02
2075	4.689E+06	1.714E+00	4.782E+02

20[illegible]	4.689E+06	1.647E+00	4.594E+02
2[illegible]	4.689E+06	1.582E+00	4.414E+02
2078	4.689E+06	1.520E+00	4.241E+02
2079	4.689E+06	1.461E+00	4.075E+02
2080	4.689E+06	1.403E+00	3.915E+02
2081	4.689E+06	1.348E+00	3.762E+02
2082	4.689E+06	1.295E+00	3.614E+02
2083	4.689E+06	1.245E+00	3.472E+02
2084	4.689E+06	1.196E+00	3.336E+02
2085	4.689E+06	1.149E+00	3.205E+02
2086	4.689E+06	1.104E+00	3.080E+02
2087	4.689E+06	1.061E+00	2.959E+02
2088	4.689E+06	1.019E+00	2.843E+02
2089	4.689E+06	9.791E-01	2.732E+02
2090	4.689E+06	9.407E-01	2.624E+02
2091	4.689E+06	9.038E-01	2.522E+02
2092	4.689E+06	8.684E-01	2.423E+02
2093	4.689E+06	8.343E-01	2.328E+02
2094	4.689E+06	8.016E-01	2.236E+02
2095	4.689E+06	7.702E-01	2.149E+02
2096	4.689E+06	7.400E-01	2.064E+02
2097	4.689E+06	7.110E-01	1.983E+02
2098	4.689E+06	6.831E-01	1.906E+02
2099	4.689E+06	6.563E-01	1.831E+02
2100	4.689E+06	6.306E-01	1.759E+02
2101	4.689E+06	6.059E-01	1.690E+02
2102	4.689E+06	5.821E-01	1.624E+02
2103	4.689E+06	5.593E-01	1.560E+02
2104	4.689E+06	5.373E-01	1.499E+02
2105	4.689E+06	5.163E-01	1.440E+02
2106	4.689E+06	4.960E-01	1.384E+02
21[illegible]	4.689E+06	4.766E-01	1.330E+02
21[illegible]	4.689E+06	4.579E-01	1.277E+02
2109	4.689E+06	4.399E-01	1.227E+02
2110	4.689E+06	4.227E-01	1.179E+02
2111	4.689E+06	4.061E-01	1.133E+02
2112	4.689E+06	3.902E-01	1.089E+02
2113	4.689E+06	3.749E-01	1.046E+02
2114	4.689E+06	3.602E-01	1.005E+02
2115	4.689E+06	3.461E-01	9.655E+01
2116	4.689E+06	3.325E-01	9.276E+01
2117	4.689E+06	3.195E-01	8.912E+01
2118	4.689E+06	3.069E-01	8.563E+01
2119	4.689E+06	2.949E-01	8.227E+01
2120	4.689E+06	2.833E-01	7.905E+01
2121	4.689E+06	2.722E-01	7.595E+01
2122	4.689E+06	2.616E-01	7.297E+01
2123	4.689E+06	2.513E-01	7.011E+01
2124	4.689E+06	2.414E-01	6.736E+01
2125	4.689E+06	2.320E-01	6.472E+01
2126	4.689E+06	2.229E-01	6.218E+01
2127	4.689E+06	2.141E-01	5.974E+01
2128	4.689E+06	2.057E-01	5.740E+01
2129	4.689E+06	1.977E-01	5.515E+01
2130	4.689E+06	1.899E-01	5.299E+01
2131	4.689E+06	1.825E-01	5.091E+01
2132	4.689E+06	1.753E-01	4.891E+01
2133	4.689E+06	1.684E-01	4.699E+01
2134	4.689E+06	1.618E-01	4.515E+01
2135	4.689E+06	1.555E-01	4.338E+01
2136	4.689E+06	1.494E-01	4.168E+01
2137	4.689E+06	1.435E-01	4.005E+01
21[illegible]	4.689E+06	1.379E-01	3.848E+01
21[illegible]	4.689E+06	1.325E-01	3.697E+01
2140	4.689E+06	1.273E-01	3.552E+01

21[illegible]	4.689E+06	1.223E-01	3.412E+01
21[illegible]	4.689E+06	1.175E-01	3.279E+01
2143	4.689E+06	1.129E-01	3.150E+01
2144	4.689E+06	1.085E-01	3.027E+01
2145	4.689E+06	1.042E-01	2.908E+01
2146	4.689E+06	1.001E-01	2.794E+01
2147	4.689E+06	9.622E-02	2.684E+01
2148	4.689E+06	9.245E-02	2.579E+01
2149	4.689E+06	8.882E-02	2.478E+01
2150	4.689E+06	8.534E-02	2.381E+01
2151	4.689E+06	8.199E-02	2.287E+01
2152	4.689E+06	7.878E-02	2.198E+01
2153	4.689E+06	7.569E-02	2.112E+01
2154	4.689E+06	7.272E-02	2.029E+01
2155	4.689E+06	6.987E-02	1.949E+01
2156	4.689E+06	6.713E-02	1.873E+01
2157	4.689E+06	6.450E-02	1.799E+01
2158	4.689E+06	6.197E-02	1.729E+01
2159	4.689E+06	5.954E-02	1.661E+01
2160	4.689E+06	5.720E-02	1.596E+01
2161	4.689E+06	5.496E-02	1.533E+01
2162	4.689E+06	5.281E-02	1.473E+01
2163	4.689E+06	5.074E-02	1.415E+01
2164	4.689E+06	4.875E-02	1.360E+01
2165	4.689E+06	4.684E-02	1.307E+01
2166	4.689E+06	4.500E-02	1.255E+01
2167	4.689E+06	4.323E-02	1.206E+01
2168	4.689E+06	4.154E-02	1.159E+01
2169	4.689E+06	3.991E-02	1.113E+01
2170	4.689E+06	3.835E-02	1.070E+01
2171	4.689E+06	3.684E-02	1.028E+01
21[illegible]	4.689E+06	3.540E-02	9.875E+00
21[illegible]	4.689E+06	3.401E-02	9.488E+00
2174	4.689E+06	3.268E-02	9.116E+00
2175	4.689E+06	3.139E-02	8.758E+00
2176	4.689E+06	3.016E-02	8.415E+00
2177	4.689E+06	2.898E-02	8.085E+00
2178	4.689E+06	2.784E-02	7.768E+00
2179	4.689E+06	2.675E-02	7.463E+00
2180	4.689E+06	2.570E-02	7.171E+00
2181	4.689E+06	2.470E-02	6.890E+00
2182	4.689E+06	2.373E-02	6.620E+00
2183	4.689E+06	2.280E-02	6.360E+00
2184	4.689E+06	2.190E-02	6.111E+00
2185	4.689E+06	2.104E-02	5.871E+00
2186	4.689E+06	2.022E-02	5.641E+00
2187	4.689E+06	1.943E-02	5.420E+00
2188	4.689E+06	1.866E-02	5.207E+00
2189	4.689E+06	1.793E-02	5.003E+00
2190	4.689E+06	1.723E-02	4.807E+00
2191	4.689E+06	1.655E-02	4.618E+00
2192	4.689E+06	1.591E-02	4.437E+00
2193	4.689E+06	1.528E-02	4.263E+00
2194	4.689E+06	1.468E-02	4.096E+00
2195	4.689E+06	1.411E-02	3.935E+00
2196	4.689E+06	1.355E-02	3.781E+00
2197	4.689E+06	1.302E-02	3.633E+00
2198	4.689E+06	1.251E-02	3.490E+00
2199	4.689E+06	1.202E-02	3.354E+00
2200	4.689E+06	1.155E-02	3.222E+00
2201	4.689E+06	1.110E-02	3.096E+00
2202	4.689E+06	1.066E-02	2.974E+00
22[illegible]	4.689E+06	1.024E-02	2.858E+00

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Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0400 1/yr ***** User Mode Selection *****
NMOC : 924.00 ppmv ***** User Mode Selection *****
Methane : 55.0000 % volume
Carbon Dioxide : 45.0000 % volume
Air Pollutant : Toluene (HAP/VOC) (AP-42, Supp. D)
Molecular Wt = 92.13 Concentration = 39.300000 ppmV

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1972 Current Year : 1999 Closure Year: 2004
Capacity : 4689000 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 269331.89 Mg/year

Model Results

Year	Refuse In Place (Mg)	Toluene (HAP/VOC) (AP-42, Supp. D) Emission Rate (Mg/yr)	(Cubic m/yr)
1973	9.972E+04	1.092E-01	2.850E+01
1974	1.994E+05	2.141E-01	5.588E+01
1975	2.992E+05	3.150E-01	8.219E+01
1976	3.989E+05	4.118E-01	1.075E+02
19	4.986E+05	5.049E-01	1.318E+02
19	5.983E+05	5.943E-01	1.551E+02
1979	6.980E+05	6.802E-01	1.775E+02
1980	7.977E+05	7.628E-01	1.991E+02
1981	8.975E+05	8.421E-01	2.198E+02
1982	9.972E+05	9.183E-01	2.396E+02
1983	1.097E+06	9.915E-01	2.587E+02
1984	1.197E+06	1.062E+00	2.771E+02
1985	1.296E+06	1.129E+00	2.947E+02
1986	1.396E+06	1.194E+00	3.117E+02
1987	1.496E+06	1.257E+00	3.280E+02
1988	1.595E+06	1.317E+00	3.436E+02
1989	1.695E+06	1.374E+00	3.586E+02
1990	1.795E+06	1.430E+00	3.731E+02
1991	1.895E+06	1.483E+00	3.869E+02
1992	1.994E+06	1.534E+00	4.003E+02
1993	2.094E+06	1.583E+00	4.131E+02
1994	2.194E+06	1.630E+00	4.254E+02
1995	2.294E+06	1.675E+00	4.372E+02
1996	2.537E+06	1.876E+00	4.897E+02
1997	2.801E+06	2.092E+00	5.460E+02
1998	3.077E+06	2.312E+00	6.034E+02
1999	3.342E+06	2.512E+00	6.556E+02
2000	3.612E+06	2.709E+00	7.068E+02
2001	3.881E+06	2.897E+00	7.561E+02
2002	4.150E+06	3.079E+00	8.034E+02
2003	4.420E+06	3.253E+00	8.489E+02
2004	**4.689E+06**	***3.420E+00***	**8.926E+02**
2005	4.689E+06	3.286E+00	8.576E+02
2006	4.689E+06	3.157E+00	8.240E+02
2007	4.689E+06	3.034E+00	7.917E+02
20	4.689E+06	2.915E+00	7.606E+02
20	4.689E+06	2.800E+00	7.308E+02
2010	4.689E+06	2.691E+00	7.021E+02

20	4.689E+06	2.585E+00	6.746E+02
20	4.689E+06	2.484E+00	6.482E+02
2013	4.689E+06	2.386E+00	6.228E+02
2014	4.689E+06	2.293E+00	5.983E+02
2015	4.689E+06	2.203E+00	5.749E+02
2016	4.689E+06	2.116E+00	5.523E+02
2017	4.689E+06	2.034E+00	5.307E+02
2018	4.689E+06	1.954E+00	5.099E+02
2019	4.689E+06	1.877E+00	4.899E+02
2020	4.689E+06	1.804E+00	4.707E+02
2021	4.689E+06	1.733E+00	4.522E+02
2022	4.689E+06	1.665E+00	4.345E+02
2023	4.689E+06	1.600E+00	4.174E+02
2024	4.689E+06	1.537E+00	4.011E+02
2025	4.689E+06	1.477E+00	3.853E+02
2026	4.689E+06	1.419E+00	3.702E+02
2027	4.689E+06	1.363E+00	3.557E+02
2028	4.689E+06	1.310E+00	3.418E+02
2029	4.689E+06	1.258E+00	3.284E+02
2030	4.689E+06	1.209E+00	3.155E+02
2031	4.689E+06	1.162E+00	3.031E+02
2032	4.689E+06	1.116E+00	2.912E+02
2033	4.689E+06	1.072E+00	2.798E+02
2034	4.689E+06	1.030E+00	2.688E+02
2035	4.689E+06	9.898E-01	2.583E+02
2036	4.689E+06	9.510E-01	2.482E+02
2037	4.689E+06	9.137E-01	2.384E+02
2038	4.689E+06	8.779E-01	2.291E+02
2039	4.689E+06	8.435E-01	2.201E+02
2040	4.689E+06	8.104E-01	2.115E+02
2041	4.689E+06	7.786E-01	2.032E+02
20	4.689E+06	7.481E-01	1.952E+02
20.	4.689E+06	7.188E-01	1.876E+02
2044	4.689E+06	6.906E-01	1.802E+02
2045	4.689E+06	6.635E-01	1.731E+02
2046	4.689E+06	6.375E-01	1.664E+02
2047	4.689E+06	6.125E-01	1.598E+02
2048	4.689E+06	5.885E-01	1.536E+02
2049	4.689E+06	5.654E-01	1.475E+02
2050	4.689E+06	5.432E-01	1.418E+02
2051	4.689E+06	5.219E-01	1.362E+02
2052	4.689E+06	5.015E-01	1.309E+02
2053	4.689E+06	4.818E-01	1.257E+02
2054	4.689E+06	4.629E-01	1.208E+02
2055	4.689E+06	4.448E-01	1.161E+02
2056	4.689E+06	4.273E-01	1.115E+02
2057	4.689E+06	4.106E-01	1.071E+02
2058	4.689E+06	3.945E-01	1.029E+02
2059	4.689E+06	3.790E-01	9.890E+01
2060	4.689E+06	3.641E-01	9.503E+01
2061	4.689E+06	3.499E-01	9.130E+01
2062	4.689E+06	3.361E-01	8.772E+01
2063	4.689E+06	3.230E-01	8.428E+01
2064	4.689E+06	3.103E-01	8.098E+01
2065	4.689E+06	2.981E-01	7.780E+01
2066	4.689E+06	2.864E-01	7.475E+01
2067	4.689E+06	2.752E-01	7.182E+01
2068	4.689E+06	2.644E-01	6.900E+01
2069	4.689E+06	2.540E-01	6.630E+01
2070	4.689E+06	2.441E-01	6.370E+01
2071	4.689E+06	2.345E-01	6.120E+01
2072	4.689E+06	2.253E-01	5.880E+01
20	4.689E+06	2.165E-01	5.649E+01
20	4.689E+06	2.080E-01	5.428E+01
2075	4.689E+06	1.998E-01	5.215E+01

20	4.689E+06	1.920E-01	5.011E+01
20	4.689E+06	1.845E-01	4.814E+01
2078	4.689E+06	1.772E-01	4.625E+01
2079	4.689E+06	1.703E-01	4.444E+01
2080	4.689E+06	1.636E-01	4.270E+01
2081	4.689E+06	1.572E-01	4.102E+01
2082	4.689E+06	1.510E-01	3.941E+01
2083	4.689E+06	1.451E-01	3.787E+01
2084	4.689E+06	1.394E-01	3.638E+01
2085	4.689E+06	1.340E-01	3.496E+01
2086	4.689E+06	1.287E-01	3.359E+01
2087	4.689E+06	1.237E-01	3.227E+01
2088	4.689E+06	1.188E-01	3.100E+01
2089	4.689E+06	1.142E-01	2.979E+01
2090	4.689E+06	1.097E-01	2.862E+01
2091	4.689E+06	1.054E-01	2.750E+01
2092	4.689E+06	1.012E-01	2.642E+01
2093	4.689E+06	9.727E-02	2.538E+01
2094	4.689E+06	9.346E-02	2.439E+01
2095	4.689E+06	8.979E-02	2.343E+01
2096	4.689E+06	8.627E-02	2.251E+01
2097	4.689E+06	8.289E-02	2.163E+01
2098	4.689E+06	7.964E-02	2.078E+01
2099	4.689E+06	7.652E-02	1.997E+01
2100	4.689E+06	7.352E-02	1.919E+01
2101	4.689E+06	7.063E-02	1.843E+01
2102	4.689E+06	6.786E-02	1.771E+01
2103	4.689E+06	6.520E-02	1.702E+01
2104	4.689E+06	6.265E-02	1.635E+01
2105	4.689E+06	6.019E-02	1.571E+01
2106	4.689E+06	5.783E-02	1.509E+01
21	4.689E+06	5.556E-02	1.450E+01
21	4.689E+06	5.338E-02	1.393E+01
2109	4.689E+06	5.129E-02	1.339E+01
2110	4.689E+06	4.928E-02	1.286E+01
2111	4.689E+06	4.735E-02	1.236E+01
2112	4.689E+06	4.549E-02	1.187E+01
2113	4.689E+06	4.371E-02	1.141E+01
2114	4.689E+06	4.199E-02	1.096E+01
2115	4.689E+06	4.035E-02	1.053E+01
2116	4.689E+06	3.876E-02	1.012E+01
2117	4.689E+06	3.724E-02	9.720E+00
2118	4.689E+06	3.578E-02	9.338E+00
2119	4.689E+06	3.438E-02	8.972E+00
2120	4.689E+06	3.303E-02	8.621E+00
2121	4.689E+06	3.174E-02	8.283E+00
2122	4.689E+06	3.049E-02	7.958E+00
2123	4.689E+06	2.930E-02	7.646E+00
2124	4.689E+06	2.815E-02	7.346E+00
2125	4.689E+06	2.705E-02	7.058E+00
2126	4.689E+06	2.598E-02	6.781E+00
2127	4.689E+06	2.497E-02	6.515E+00
2128	4.689E+06	2.399E-02	6.260E+00
2129	4.689E+06	2.305E-02	6.014E+00
2130	4.689E+06	2.214E-02	5.779E+00
2131	4.689E+06	2.127E-02	5.552E+00
2132	4.689E+06	2.044E-02	5.334E+00
2133	4.689E+06	1.964E-02	5.125E+00
2134	4.689E+06	1.887E-02	4.924E+00
2135	4.689E+06	1.813E-02	4.731E+00
2136	4.689E+06	1.742E-02	4.546E+00
2137	4.689E+06	1.674E-02	4.367E+00
21	4.689E+06	1.608E-02	4.196E+00
21	4.689E+06	1.545E-02	4.032E+00
2140	4.689E+06	1.484E-02	3.873E+00

2[illegible]	4.689E+06	1.426E-02	3.722E+00
2[illegible]	4.689E+06	1.370E-02	3.576E+00
2143	4.689E+06	1.316E-02	3.435E+00
2144	4.689E+06	1.265E-02	3.301E+00
2145	4.689E+06	1.215E-02	3.171E+00
2146	4.689E+06	1.168E-02	3.047E+00
2147	4.689E+06	1.122E-02	2.927E+00
2148	4.689E+06	1.078E-02	2.813E+00
2149	4.689E+06	1.036E-02	2.702E+00
2150	4.689E+06	9.949E-03	2.596E+00
2151	4.689E+06	9.559E-03	2.495E+00
2152	4.689E+06	9.185E-03	2.397E+00
2153	4.689E+06	8.824E-03	2.303E+00
2154	4.689E+06	8.478E-03	2.213E+00
2155	4.689E+06	8.146E-03	2.126E+00
2156	4.689E+06	7.827E-03	2.042E+00
2157	4.689E+06	7.520E-03	1.962E+00
2158	4.689E+06	7.225E-03	1.885E+00
2159	4.689E+06	6.941E-03	1.811E+00
2160	4.689E+06	6.669E-03	1.740E+00
2161	4.689E+06	6.408E-03	1.672E+00
2162	4.689E+06	6.157E-03	1.607E+00
2163	4.689E+06	5.915E-03	1.544E+00
2164	4.689E+06	5.683E-03	1.483E+00
2165	4.689E+06	5.460E-03	1.425E+00
2166	4.689E+06	5.246E-03	1.369E+00
2167	4.689E+06	5.041E-03	1.315E+00
2168	4.689E+06	4.843E-03	1.264E+00
2169	4.689E+06	4.653E-03	1.214E+00
2170	4.689E+06	4.471E-03	1.167E+00
2171	4.689E+06	4.295E-03	1.121E+00
2[illegible]	4.689E+06	4.127E-03	1.077E+00
21[illegible]	4.689E+06	3.965E-03	1.035E+00
2174	4.689E+06	3.810E-03	9.942E-01
2175	4.689E+06	3.660E-03	9.552E-01
2176	4.689E+06	3.517E-03	9.177E-01
2177	4.689E+06	3.379E-03	8.817E-01
2178	4.689E+06	3.246E-03	8.472E-01
2179	4.689E+06	3.119E-03	8.140E-01
2180	4.689E+06	2.997E-03	7.820E-01
2181	4.689E+06	2.879E-03	7.514E-01
2182	4.689E+06	2.766E-03	7.219E-01
2183	4.689E+06	2.658E-03	6.936E-01
2184	4.689E+06	2.554E-03	6.664E-01
2185	4.689E+06	2.454E-03	6.403E-01
2186	4.689E+06	2.357E-03	6.152E-01
2187	4.689E+06	2.265E-03	5.911E-01
2188	4.689E+06	2.176E-03	5.679E-01
2189	4.689E+06	2.091E-03	5.456E-01
2190	4.689E+06	2.009E-03	5.242E-01
2191	4.689E+06	1.930E-03	5.037E-01
2192	4.689E+06	1.854E-03	4.839E-01
2193	4.689E+06	1.782E-03	4.649E-01
2194	4.689E+06	1.712E-03	4.467E-01
2195	4.689E+06	1.645E-03	4.292E-01
2196	4.689E+06	1.580E-03	4.124E-01
2197	4.689E+06	1.518E-03	3.962E-01
2198	4.689E+06	1.459E-03	3.807E-01
2199	4.689E+06	1.401E-03	3.657E-01
2200	4.689E+06	1.347E-03	3.514E-01
2201	4.689E+06	1.294E-03	3.376E-01
220[illegible]	4.689E+06	1.243E-03	3.244E-01
2[illegible]	4.689E+06	1.194E-03	3.117E-01

Attachment C

Fugitive Dust Emissions Source Description

Fugitive Dust Particulate Matter Emissions

Various approaches to landfill emissions estimates are specified for different regulatory applicability determinations. Federal solid waste facility criteria are established by RCRA Subtitle - D and implemented by the Illinois EPA Bureau of Land, Section 814 Regulations. These regulations establish certain operational requirements involving heavy construction and material handling. Fugitive emissions may be generated from heavy construction activities, which include: cell development, borrow sources, stockpiles, and operations such as the application of daily, long-term or final cover soils.

Since the Part 70 potential to emit for this particular source category does not include fugitive emissions for sources other than landfill gas NMOC, detailed calculations of these activities and associated non-road equipment emissions are not included in this analysis. In fact, certain equipment are classified as trivial; and with the application of controls such as vegetation or watering on a routine basis, calculations typically demonstrate insignificant levels of emissions.

In addition to air criteria, operational provisions of the solid waste regulations require significant controls necessary to minimize odor and fugitive dust emissions while satisfying the regulatory objectives so as to not constitute or contribute to a nuisance, a health hazard, or a safety hazard.

As mentioned previously, Unit ID# 2 (fugitive emissions from landfill) includes fugitive dust emissions which must be included with this Part 70 permit application. Fugitive dust results from waste transport vehicles using unpaved site haul roads and is expressed as PM_{10} (particulate matter with a diameter 10µm). Calculations used to determine the site's fugitive PM_{10} emissions are shown below.

Task: *Determine fugitive dust emissions (expressed as PM_{10}) from site haul roads.*

Solution:

In order to calculate the fugitive dust emissions, an emission factor was determined using the following empirical expression (AP-42, Fifth Ed., Sec. 13.2.2.2, Equ. 1):

$$E = k(5.9)\left(\frac{s}{12}\right)\left(\frac{S}{30}\right)\left(\frac{W}{3}\right)^{0.7}\left(\frac{w}{4}\right)^{0.5}\left(\frac{365-p}{365}\right) \quad {}^{lb}/_{VMT} \qquad \text{(Equation B-4)}$$

where: E = Emission factor, pounds per vehicle mile traveled (lb/VMT);
k = Particle size multiplier (dimensionless);
s = Silt content of road surface material (%);
S = Mean vehicle speed, miles per hour (mph);
W = Mean vehicle weight (tons);
w = Mean number of wheels; and
p = Number of days with at least 0.01 in. of precipitation per year.

The site specific emission factor was then determined based on the following parameters:

k = 0.36 for aerodynamic particle size 10µm (PM_{10}) (AP-42, Fifth Ed., Sec. 13.2.2.2);
s = 2.5% (assumed). Site roads are very tightly compacted gravel and display little or no dust according to site personnel. This value is <6.4% which is the mean silt content for municipal solid waste disposal routes (AP-42, Fifth Ed., Table 13.2.2-1);
S = 20 mph (assumed);
W = 15 tons tare, 30 tons gross;
w = 6 (majority of haul trucks are dual rear axle garbage trucks); and
p = 127 (estimated from AP-42, Fifth Ed., Fig. 13.2.2-1, for Winnebago County, IL).

Equation B-4 was used to calculate two site specific emission factors—one for loaded trucks taking garbage to the working face of the landfill (gross), and another for empty trucks leaving the working face (tare):

$$E_{gross} = (0.36)(5.9)\left(\frac{2.5}{12}\right)\left(\frac{20}{30}\right)\left(\frac{30}{3}\right)^{0.7}\left(\frac{6}{4}\right)^{0.5}\left(\frac{365-127}{365}\right) \quad {}^{lb}/_{VMT}$$

$$E_{gross} = 1.18 \, {}^{lb}/_{VMT}$$

$$E_{tare} = (0.36)(5.9)\left(\frac{2.5}{12}\right)\left(\frac{20}{30}\right)\left(\frac{15}{3}\right)^{0.7}\left(\frac{6}{4}\right)^{0.5}\left(\frac{365-127}{365}\right) \quad {}^{lb}/_{VMT}$$

$$E_{tare} = 0.73 \, {}^{lb}/_{VMT}$$

Because the haul length for both gross haul and tare haul are equal, the two emission factors were averaged and the resulting emission factor was used for a round-trip haul:

$$E = \frac{E_{gross} + E_{tare}}{2} = \frac{1.18 + 0.73}{2} \quad {}^{lb}/_{VMT}$$

$$E = 0.96 \, {}^{lb}/_{VMT}$$

Finally, the annual fugitive PM_{10} emissions from unpaved haul roads were determined with the conservative assumption that all haul vehicles will use the longest haul road (2,670 feet one-way) shown on—Site Layout; therefore, one round trip haul is 5,340 feet in length. Based on information from site personnel that approximately 75 trucks haul garbage per day, and 302 operating days in 1998 (IEPA's 1998 Solid Waste Facility Annual Report), the annual fugitive emissions were calculated as follows:

$$\text{Annual vehicle miles traveled} = (5{,}340 \text{ ft})\left(\frac{1 \text{ mile}}{5{,}280 \text{ ft}}\right)\left(\frac{75 \text{ vehicles}}{\text{day}}\right)\left(\frac{302 \text{ days}}{1 \text{ year}}\right) = 22{,}907 \, {}^{VMT}/_{yr}$$

$$\text{Annual fugitive } PM_{10} \text{ emissions} = (0.96 \, {}^{lbs}/_{VMT})(22{,}907 \, {}^{VMT}/_{yr})\left(\frac{1 \text{ ton}}{2000 \text{ lbs}}\right)$$

$$\boxed{\text{Fugitive } PM_{10} \text{ emissions} = 11.0 \text{ tpy}}$$

Attachment D

AP-42 Section 2.4

AP-42 Supplement D

2.4 MUNICIPAL SOLID WASTE LANDFILLS

2.4.1 General[1-4]

A municipal solid waste (MSW) landfill unit is a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile. An MSW landfill unit may also receive other types of wastes, such as commercial solid waste, nonhazardous sludge, and industrial solid waste. The municipal solid waste types potentially accepted by MSW landfills include (most landfills accept only a few of the following categories):

- MSW,
- Household hazardous waste,
- Municipal sludge,
- Municipal waste combustion ash,
- Infectious waste,
- Waste tires,
- Industrial non-hazardous waste,
- Conditionally exempt small quantity generator (CESQG) hazardous waste,
- Construction and demolition waste,
- Agricultural wastes,
- Oil and gas wastes, and
- Mining wastes.

In the United States, approximately 57 percent of solid waste is landfilled, 16 percent is incinerated, and 27 percent is recycled or composted. There were an estimated 2,500 active MSW landfills in the United States in 1995. These landfills were estimated to receive 189 million megagrams (Mg) (208 million tons) of waste annually, with 55 to 60 percent reported as household waste, and 35 to 45 percent reported as commercial waste.

2.4.2 Process Description[2,5]

There are three major designs for municipal landfills. These are the area, trench, and ramp methods. All of these methods utilize a three step process, which includes spreading the waste, compacting the waste, and covering the waste with soil. The trench and ramp methods are not commonly used, and are not the preferred methods when liners and leachate collection systems are utilized or required by law. The area fill method involves placing waste on the ground surface or landfill liner, spreading it in layers, and compacting with heavy equipment. A daily soil cover is spread over the compacted waste. The trench method entails excavating trenches designed to receive a day's worth of waste. The soil from the excavation is often used for cover material and wind breaks. The ramp method is typically employed on sloping land, where waste is spread and compacted similar to the area method, however, the cover material obtained is generally from the front of the working face of the filling operation.

Modern landfill design often incorporates liners constructed of soil (i.e., recompacted clay), or synthetics (i.e., high density polyethylene), or both to provide an impermeable barrier to leachate (i.e., water that has passed through the landfill) and gas migration from the landfill.

2.4.3 Control Technology[1,2,6]

The Resource Conservation and Recovery Act (RCRA) Subtitle D regulations promulgated on October 9, 1991 require that the concentration of methane generated by MSW landfills not exceed 25 percent of the lower explosive limit (LEL) in on-site structures, such as scale houses, or the LEL at the facility property boundary.

The New Source Performance Standards (NSPS) and Emission Guidelines for air emissions from MSW landfills for certain new and existing landfills were published in the Federal Register on March 1, 1996. The regulation requires that Best Demonstrated Technology (BDT) be used to reduce MSW landfill emissions from affected new and existing MSW landfills emitting greater than or equal to 50 Mg/yr (55 tons/yr) of non-methane organic compounds (NMOCs). The MSW landfills that are affected by the NSPS/Emission Guidelines are each new MSW landfill, and each existing MSW landfill that has accepted waste since November 8, 1987, or that has capacity available for future use. The NSPS/Emission Guidelines affect landfills with a design capacity of 2.5 million Mg (2.75 million tons) or more. Control systems require: (1) a well-designed and well-operated gas collection system, and (2) a control device capable of reducing NMOCs in the collected gas by 98 weight-percent.

Landfill gas (LFG) collection systems are either active or passive systems. Active collection systems provide a pressure gradient in order to extract LFG by use of mechanical blowers or compressors. Passive systems allow the natural pressure gradient created by the increase in pressure created by LFG generation within the landfill to mobilize the gas for collection.

LFG control and treatment options include (1) combustion of the LFG, and (2) purification of the LFG. Combustion techniques include techniques that do not recover energy (i.e., flares and thermal incinerators), and techniques that recover energy (i.e., gas turbines and internal combustion engines) and generate electricity from the combustion of the LFG. Boilers can also be employed to recover energy from LFG in the form of steam. Flares involve an open combustion process that requires oxygen for combustion, and can be open or enclosed. Thermal incinerators heat an organic chemical to a high enough temperature in the presence of sufficient oxygen to oxidize the chemical to carbon dioxide (CO_2) and water. Purification techniques can also be used to process raw landfill gas to pipeline quality natural gas by using adsorption, absorption, and membranes.

2.4.4 Emissions[2,7]

Methane (CH_4) and CO_2 are the primary constituents of landfill gas, and are produced by microorganisms within the landfill under anaerobic conditions. Transformations of CH_4 and CO_2 are mediated by microbial populations that are adapted to the cycling of materials in anaerobic environments. Landfill gas generation, including rate and composition, proceeds through four phases. The first phase is aerobic [i.e., with oxygen (O_2) available] and the primary gas produced is CO_2. The second phase is characterized by O_2 depletion, resulting in an anaerobic environment, where large amounts of CO_2 and some hydrogen (H_2) are produced. In the third phase, CH_4 production begins, with an accompanying reduction in the amount of CO_2 produced. Nitrogen (N_2) content is initially high in landfill gas in the first phase, and declines sharply as the landfill proceeds through the second and third phases. In the fourth phase, gas production of CH_4, CO_2, and N_2 becomes fairly steady. The total time and phase duration of gas generation varies with landfill conditions (i.e., waste composition, design management, and anaerobic state).

Typically, LFG also contains a small amount of non-methane organic compounds (NMOC). This NMOC fraction often contains various organic hazardous air pollutants (HAP), greenhouse gases (GHG), and compounds associated with stratospheric ozone depletion. The NMOC fraction also contains volatile organic compounds (VOC). The weight fraction of VOC can be determined by subtracting the weight fractions of individual compounds that are non-photochemically reactive (i.e., negligibly-reactive organic compounds as defined in 40 CFR 51.100).

Other emissions associated with MSW landfills include combustion products from LFG control and utilization equipment (i.e., flares, engines, turbines, and boilers). These include carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), hydrogen chloride (HCl), particulate matter (PM) and other combustion products (including HAPs). PM emissions can also be generated in the form of fugitive dust created by mobile sources (i.e., garbage trucks) traveling along paved and unpaved surfaces. The reader should consult AP-42 Volume I Sections 13.2.1 and 13.2.2 for information on estimating fugitive dust emissions from paved and unpaved roads. – also, see pg. 2.4-9

The rate of emissions from a landfill is governed by gas production and transport mechanisms. Production mechanisms involve the production of the emission constituent in its vapor phase through vaporization, biological decomposition, or chemical reaction. Transport mechanisms involve the transportation of a volatile constituent in its vapor phase to the surface of the landfill, through the air boundary layer above the landfill, and into the atmosphere. The three major transport mechanisms that enable transport of a volatile constituent in its vapor phase are diffusion, convection, and displacement.

2.4.4.1 Uncontrolled Emissions — To estimate uncontrolled emissions of the various compounds present in landfill gas, total landfill gas emissions must first be estimated. Uncontrolled CH_4 emissions may be estimated for individual landfills by using a theoretical first-order kinetic model of methane production developed by the EPA.[8] This model is known as the Landfill Air Emissions Estimation model, and can be accessed from the Office of Air Quality Planning and Standards Technology Transfer Network Website (OAQPS TTN Web) in the Clearinghouse for Inventories and Emission Factors (CHIEF) technical area (URL http://www.epa.gov/ttn/chief). The Landfill Air Emissions Estimation model equation is as follows:

$$Q_{CH_4} = L_o R (e^{-kc} - e^{-kt}) \quad (1)$$

where:

Q_{CH_4}	=	Methane generation rate at time t, m^3/yr;
L_O	=	Methane generation potential, m^3 CH_4/Mg refuse;
R	=	Average annual refuse acceptance rate during active life, Mg/yr;
e	=	Base log, unitless;
k	=	Methane generation rate constant, yr^{-1};
c	=	Time since landfill closure, yrs (c = 0 for active landfills); and
t	=	Time since the initial refuse placement, yrs.

It should be noted that the model above was designed to estimate LFG generation and not LFG emissions to the atmosphere. Other fates may exist for the gas generated in a landfill, including capture and subsequent microbial degradation within the landfill's surface layer. Currently, there are no data that adequately address this fate. It is generally accepted that the bulk of the gas generated will be emitted through cracks or other openings in the landfill surface.

Site-specific landfill information is generally available for variables R, c, and t. When refuse acceptance rate information is scant or unknown, R can be determined by dividing the refuse in place by the age of the landfill. If a facility has documentation that a certain segment (cell) of a landfill received *only* nondegradable refuse, then the waste from this segment of the landfill can be excluded from the calculation of R. Nondegradable refuse includes concrete, brick, stone, glass, plaster, wallboard, piping, plastics, and metal objects. The average annual acceptance rate should only be estimated by this method when there is inadequate information available on the actual average acceptance rate. The time variable, t, includes the total number of years that the refuse has been in place (including the number of years that the landfill has accepted waste and, if applicable, has been closed).

Values for variables L_o and k must be estimated. Estimation of the potential CH_4 generation capacity of refuse (L_o) is generally treated as a function of the moisture and organic content of the refuse. Estimation of the CH_4 generation constant (k) is a function of a variety of factors, including moisture, pH, temperature, and other environmental factors, and landfill operating conditions. Specific CH_4 generation constants can be computed by the use of EPA Method 2E (40 CFR Part 60 Appendix A).

The Landfill Air Emission Estimation model includes both regulatory default values and recommended AP-42 default values for L_o and k. The regulatory defaults were developed for compliance purposes (NSPS/Emission Guideline). As a result, the model contains conservative L_o and k default values in order to protect human health, to encompass a wide range of landfills, and to encourage the use of site-specific data. Therefore, different L_o and k values may be appropriate in estimating landfill emissions for particular landfills and for use in an emissions inventory.

Recommended AP-42 defaults include a k value of 0.04/yr for areas recieving 25 inches or more of rain per year. A default k of 0.02/yr should be used in drier areas (<25 inches/yr). An L_o value of 100 m^3/Mg (3,530 ft^3/ton) refuse is appropriate for most landfills. Although the recommended default k and L_o are based upon the best fit to 21 different landfills, the predicted methane emissions ranged from 38 to 492% of actual, and had a relative standard deviation of 0.85. It should be emphasized that in order to comply with the NSPS/Emission Guideline, the regulatory defaults for k and L_o must be applied as specified in the final rule.

When gas generation reaches steady state conditions, LFG consists of approximately 40 percent by volume CO_2, 55 percent CH_4, 5 percent N_2 (and other gases), and trace amounts of NMOCs. Therefore, the estimate derived for CH_4 generation using the Landfill Air Emissions Estimation model can also be used to represent CO_2 generation. Addition of the CH_4 and CO_2 emissions will yield an estimate of total landfill gas emissions. If site-specific information is available to suggest that the CH_4 content of landfill gas is not 55 percent, then the site-specific information should be used, and the CO_2 emission estimate should be adjusted accordingly.

Most of the NMOC emissions result from the volatilization of organic compounds contained in the landfilled waste. Small amounts may be created by biological processes and chemical reactions within the landfill. The current version of the Landfill Air Emissions Estimation model contains a proposed regulatory default value for total NMOC of 4,000 ppmv, expressed as hexane. However, available data show that there is a range of over 4,400 ppmv for total NMOC values from landfills. The proposed regulatory default value for NMOC concentration was developed for regulatory compliance purposes and to provide the most cost-effective default values on a national basis. For emissions inventory purposes, site-specific information should be taken into account when determining the total NMOC concentration. In the absence of site-specific information, a value of 2,420 ppmv as hexane is suggested for landfills known to have co-disposal of MSW and non-residential waste. If the landfill is known to contain only MSW or

have very little organic commercial/industrial wastes, then a total NMOC value of 595 ppmv as hexane should be used. In addition, as with the landfill model defaults, the regulatory default value for NMOC content must be used in order to comply with the NSPS/Emission Guideline.

If a site-specific total pollutant concentration is available (i.e., as measured by EPA Reference Method 25C), it must be corrected for air infiltration which can occur by two different mechanisms: LFG sample

$$C_P \text{ (ppmv) (corrected for air infiltration)} = \frac{C_P \text{ (ppmv)} \ (1 \times 10^6)}{C_{CO_2} \text{ (ppmv)} + C_{CH_4} \text{ (ppmv)}} \qquad (2)$$

dilution, and air intrusion into the landfill. These corrections require site-specific data for the LFG CH_4, CO_2, nitrogen (N_2), and oxygen (O_2) content. If the ratio of N_2 to O_2 is less than or equal to 4.0 (as found in ambient air), then the total pollutant concentration is adjusted for sample dilution by assuming that CO_2 and CH_4 are the primary (100 percent) constituents of landfill gas, and the following equation is used:

where:

C_P	=	Concentration of pollutant P in landfill gas (i.e., NMOC as hexane), ppmv;
C_{CO_2}	=	CO_2 concentration in landfill gas, ppmv;
C_{CH_4}	=	CH_4 Concentration in landfill gas, ppmv; and
1×10^6	=	Constant used to correct concentration of P to units of ppmv.

If the ratio of N_2 to O_2 concentrations (i.e., C_{N_2} , C_{O_2}) is greater than 4.0, then the total pollutant concentration should be adjusted for air intrusion into the landfill by using equation 2 and adding the concentration of N_2 (i.e., C_{N_2}) to the denominator. Values for C_{CO_2} , C_{CH_4} , C_{N_2} , C_{O_2} , can usually be found in the source test report for the particular landfill along with the total pollutant concentration data.

To estimate emissions of NMOC or other landfill gas constituents, the following equation should be used:

$$Q_P = 1.82 \ Q_{CH_4} * \frac{C_P}{(1 \times 10^6)} \qquad (3)$$

where:

Q_P	=	Emission rate of pollutant P (i.e. NMOC), m^3/yr;
Q_{CH_4}	=	CH_4 generation rate, m^3/yr (from the Landfill Air Emissions Estimation model);
C_P	=	Concentration of P in landfill gas, ppmv; and
1.82	=	Multiplication factor (assumes that approximately 55 percent of landfill gas is CH_4 and 45 percent is CO_2, N_2, and other constituents).

Uncontrolled mass emissions per year of total NMOC (as hexane), CO_2, CH_4, and speciated organic and inorganic compounds can be estimated by the following equation:

$$UM_P = Q_P * \left[\frac{MW_P * 1 \text{ atm}}{(8.205 \times 10^{-5} \text{ m}^3\text{-atm/gmol-}^\circ\text{K})(1000 \text{g/kg})(273 + T\ ^\circ\text{K})} \right] \quad (4)$$

where:

UM_P	=	Uncontrolled mass emissions of pollutant P (i.e., NMOC), kg/yr;
MW_P	=	Molecular weight of P, g/gmol (i.e., 86.18 for NMOC as hexane);
Q_P	=	NMOC emission rate of P, m^3/yr; and
T	=	Temperature of landfill gas, °C.

This equation assumes that the operating pressure of the system is approximately 1 atmosphere. If the temperature of the landfill gas is not known, a temperature of 25°C (77°F) is recommended.

Uncontrolled default concentrations of speciated organics along with some inorganic compounds are presented in Table 2.4-1. These default concentrations have already been corrected for air infiltration and can be used as input parameters to equation 3 or the Landfill Air Emission Estimation model for estimating speciated emissions from landfills when site-specific data are not available. An analysis of the data, based on the co-disposal history (with non-residential wastes) of the individual landfills from which the concentration data were derived, indicates that for benzene, NMOC, and toluene, there is a difference in the uncontrolled concentrations. Table 2.4-2 presents the corrected concentrations for benzene, NMOC, and toluene to use based on the site's co-disposal history.

It is important to note that the compounds listed in Tables 2.4-1 and 2.4-2 are not the only compounds likely to be present in LFG. The listed compounds are those that were identified through a review of the available literature. The reader should be aware that additional compounds are likely present, such as those associated with consumer or industrial products. Given this information, extreme caution should be exercised in the use of the default VOC weight fractions and concentrations given at the bottom of Table 2.4-2. These default VOC values are heavily influenced by the ethane content of the LFG. Available data have shown that there is a range of over 1,500 ppmv in LFG ethane content among landfills.

2.4.4.2 Controlled Emissions — Emissions from landfills are typically controlled by installing a gas collection system, and combusting the collected gas through the use of internal combustion engines, flares, or turbines. Gas collection systems are not 100 percent efficient in collecting landfill gas, so emissions of CH_4 and NMOC at a landfill with a gas recovery system still occur. To estimate controlled emissions of CH_4, NMOC, and other constituents in landfill gas, the collection efficiency of the system must first be estimated. Reported collection efficiencies typically range from 60 to 85 percent, with an average of 75 percent most commonly assumed. Higher collection efficiencies may be achieved at some sites (i.e., those engineered to control gas emissions). If site-specific collection efficiencies are available (i.e., through a comprehensive surface sampling program), then they should be used instead of the 75 percent average.

Controlled emission estimates also need to take into account the control efficiency of the control device. Control efficiencies based on test data for the combustion of CH_4, NMOC, and some speciated organics with differing control devices are presented in Table 2.4-3. Emissions from the control devices need to be added to the uncollected emissions to estimate total controlled emissions.

Controlled CH_4, NMOC, and speciated emissions can be calculated with equation 5. It is assumed that the landfill gas collection and control system operates 100 percent of the time. Minor durations of system downtime associated with routine maintenance and repair (i.e., 5 to 7 percent) will not appreciably effect emission estimates. The first term in equation 5 accounts for emissions from uncollected landfill gas, while the second term accounts for emissions of the pollutant that were collected but not combusted in the control or utilization device:

$$CM_p = \left[UM_p * \left(1 - \frac{\eta_{col}}{100}\right)\right] + \left[UM_p * \frac{\eta_{col}}{100} * \left(1 - \frac{\eta_{cnt}}{100}\right)\right] \quad (5)$$

where:

CMp	=	Controlled mass emissions of pollutant P, kg/yr;
UMp	=	Uncontrolled mass emissions of P, kg/yr (from equation 4 or the Landfill Air Emissions Estimation Model);
η_{col}	=	Collection efficiency of the landfill gas collection system, percent; and
η_{cnt}	=	Control efficiency of the landfill gas control or utilization device, percent.

Emission factors for the secondary compounds, CO and NO_x, exiting the control device are presented in Tables 2.4-4 and 2.4-5. These emission factors should be used when equipment vendor guarantees are not available.

Controlled emissions of CO_2 and sulfur dioxide (SO_2) are best estimated using site-specific landfill gas constituent concentrations and mass balance methods.[68] If site-specific data are not available, the data in tables 2.4-1 through 2.4-3 can be used with the mass balance methods that follow.

Controlled CO_2 emissions include emissions from the CO_2 component of landfill gas (equivalent to uncontrolled emissions) and additional CO_2 formed during the combustion of landfill gas. The bulk of the CO_2 formed during landfill gas combustion comes from the combustion of the CH_4 fraction. Small quantities will be formed during the combustion of the NMOC fraction, however, this typically amounts to less than 1 percent of total CO_2 emissions by weight. Also, the formation of CO through incomplete combustion of landfill gas will result in small quantities of CO_2 not being formed. This contribution to the overall mass balance picture is also very small and does not have a significant impact on overall CO_2 emissions.[68]

The following equation which assumes a 100 percent combustion efficiency for CH_4 can be used to estimate CO_2 emissions from controlled landfills:

$$CM_{CO_2} = UM_{CO_2} + \left[UM_{CH_4} * \frac{\eta_{col}}{100} * 2.75\right] \quad (6)$$

where:

CM_{CO_2}	=	Controlled mass emissions of CO_2, kg/yr;
UM_{CO_2}	=	Uncontrolled mass emissions of CO_2, kg/yr (from equation 4 or the Landfill Air Emission Estimation Model);
UM_{CH_4}	=	Uncontrolled mass emissions of CH_4, kg/yr (from equation 4 on the Landfill Air Emission Estimation Model);
η_{col}	=	Efficiency of the landfill gas collection system, percent; and
2.75	=	Ratio of the molecular weight of CO_2 to the molecular weight of CH_4.

To prepare estimates of SO_2 emissions, data on the concentration of reduced sulfur compounds within the landfill gas are needed. The best way to prepare this estimate is with site-specific information on the total reduced sulfur content of the landfill gas. Often these data are expressed in ppmv as sulfur (S). Equations 3 and 4 should be used first to determine the uncontrolled mass emission rate of reduced sulfur compounds as sulfur. Then, the following equation can be used to estimate SO_2 emissions:

$$CM_{SO_2} = UM_S * \frac{\eta_{col}}{100} * 2.0 \quad (7)$$

where:

CM_{SO_2} = Controlled mass emissions of SO_2, kg/yr;
UM_S = Uncontrolled mass emissions of reduced sulfur compounds as sulfur, kg/yr (from equations 3 and 4);
η_{col} = Efficiency of the landfill gas collection system, percent; and
2.0 = Ratio of the molecular weight of SO_2 to the molecular weight of S.

The next best method to estimate SO_2 concentrations, if site-specific data for total reduced sulfur compounds as sulfur are not available, is to use site-specific data for speciated reduced sulfur compound concentrations. These data can be converted to ppmv as S with equation 8. After the total reduced sulfur as S has been obtained from equation 8, then equations 3, 4, and 7 can be used to derive SO_2 emissions.

$$C_S = \sum_{i=1}^{n} C_P * S_P \quad (8)$$

where:

C_S = Concentration of total reduced sulfur compounds, ppmv as S (for use in equation 3);
C_P = Concentration of each reduced sulfur compound, ppmv;
S_P = Number of moles of S produced from the combustion of each reduced sulfur compound (i.e., 1 for sulfides, 2 for disulfides); and
n = Number of reduced sulfur compounds available for summation.

If no site-specific data are available, a value of 46.9 ppmv can be assumed for C_S (for use in equation 3). This value was obtained by using the default concentrations presented in Table 2.4-1 for reduced sulfur compounds and equation 8.

Hydrochloric acid [Hydrogen Chloride (HCl)] emissions are formed when chlorinated compounds in LFG are combusted in control equipment. The best methods to estimate emissions are mass balance methods that are analogous to those presented above for estimating SO_2 emissions. Hence, the best source of data to estimate HCl emissions is site-specific LFG data on total chloride [expressed in ppmv as the chloride ion (Cl^-)]. If these data are not available, then total chloride can be estimated from data on individual chlorinated species using equation 9 below. However, emission estimates may be

underestimated, since not every chlorinated compound in the LFG will be represented in the laboratory report (i.e., only those that the analytical method specifies).

$$C_{Cl} = \sum_{i=1}^{n} C_p * Cl_p \quad (9)$$

where:

C_{Cl}	=	Concentration of total chloride, ppmv as Cl^- (for use in equation 3);
C_P	=	Concentration of each chlorinated compound, ppmv;
Cl_P	=	Number of moles of Cl^- produced from the combustion of each chlorinated compound (i.e., 3 for 1,1,1-trichloroethane); and
n	=	Number of chlorinated compounds available for summation.

After the total chloride concentration (C_{Cl}) has been estimated, equations 3 and 4 should be used to determine the total uncontrolled mass emission rate of chlorinated compounds as chloride ion (UM_{Cl}). This value is then used in equation 10 below to derive HCl emission estimates:

$$CM_{HCl} = UM_{Cl} * \frac{\eta_{col}}{100} * 1.03 * \left[1 - \frac{\eta_{cnt}}{100}\right] \left[\eta_{cat}/100\right] \quad (10)$$

where:

CM_{HCl}	=	Controlled mass emissions of HCl, kg/yr;
UM_{Cl}	=	Uncontrolled mass emissions of chlorinated compounds as chloride, kg/yr (from equations 3 and 4);
η_{col}	=	Efficiency of the landfill gas collection system, percent;
1.03	=	Ratio of the molecular weight of HCl to the molecular weight of Cl^-; and
η_{cnt}	=	Control efficiency of the landfill gas control or utilization device, percent.

In estimating HCl emissions, it is assumed that all of the chloride ion from the combustion of chlorinated LFG constituents is converted to HCl. If an estimate of the control efficiency, η_{cnt}, is not available, then the high end of the control efficiency range for the equipment listed in Table 9 should be used. This assumption is recommended to assume that HCl emissions are not under-estimated.

If site-specific data on total chloride or speciated chlorinated compounds are not available, then a default value of 42.0 ppmv can be used for C_{Cl}. This value was derived from the default LFG constituent concentrations presented in Table 2.4-1. As mentioned above, use of this default may produce underestimates of HCl emissions since it is based only on those compounds for which analyses have been performed. The constituents listed in Table 2.4-1are likely not all of the chlorinated compounds present in LFG.

The reader is referred to Sections ~~11.2.1~~ 13.2.2 (Unpaved Roads, SCC 50100401), and ~~11.2.4~~ 13.2.3 (Heavy Construction Operations) of Volume I, and Section II-7 (Construction Equipment) of Volume II, of the AP-42 document for determination of associated fugitive dust and exhaust emissions from these emission sources at MSW landfills.

In equation 10 on page 2.4-9 of Section 2.4, the last term should be

$$\left(\frac{\eta_{cnt}}{100}\right)$$

The control efficiency of the landfill gas control device should be taken from table 2.4-3.

2.4.5 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. This is revision includes major revisions of the text and recommended emission factors conained in the section. The most significant revisions to this section since publication in the Fifth Edition are summarized below.

- The equations to calculate the CH4, CO2 and other constituents were simplified.
- The default L0 and k were revised based upon an expanded base of gas generation data.
- The default ratio of CO2 to CH4 was revised based upon averages observed in available source test reports.
- The default concentrations of LFG constituents were revised based upon additional data.
- Additional control efficiencies were included and existing efficiencies were revised based upon additional emission test data.
- Revised and expanded the recommended emission factors for secondary compounds emitted from typical control devices.

Table 2.4-1. DEFAULT CONCENTRATIONS FOR LFG CONSTITUENTS[a]

(SCC 50100402, 50300603)

Compound	Molecular Weight	Default Concentration (ppmv)	Emission Factor Rating
1,1,1-Trichloroethane (methyl chloroform)[a]	133.42	0.48	B
1,1,2,2-Tetrachloroethane[a]	167.85	1.11	C
1,1-Dichloroethane (ethylidene dichloride)[a]	98.95	2.35	B
1,1-Dichloroethene (vinylidene chloride)[a]	96.94	0.20	B
1,2-Dichloroethane (ethylene dichloride)[a]	98.96	0.41	B
1,2-Dichloropropane (propylene dichloride)[a]	112.98	0.18	D
2-Propanol (isopropyl alcohol)	60.11	50.1	E
Acetone	58.08	7.01	B
Acrylonitrile[a]	53.06	6.33	D
Bromodichloromethane	163.83	3.13	C
Butane	58.12	5.03	C
Carbon disulfide[a]	76.13	0.58	C
Carbon monoxide[b]	28.01	141	E
Carbon tetrachloride[a]	153.84	0.004	B
Carbonyl sulfide[a]	60.07	0.49	D
Chlorobenzene[a]	112.56	0.25	C
Chlorodifluoromethane	86.47	1.30	C
Chloroethane (ethyl chloride)[a]	64.52	1.25	B
Chloroform[a]	119.39	0.03	B
Chloromethane	50.49	1.21	B
Dichlorobenzene[c]	147	0.21	E
Dichlorodifluoromethane	120.91	15.7	A
Dichlorofluoromethane	102.92	2.62	D
Dichloromethane (methylene chloride)[a]	84.94	14.3	A
Dimethyl sulfide (methyl sulfide)	62.13	7.82	C
Ethane	30.07	889	C
Ethanol	46.08	27.2	E
Ethyl mercaptan (ethanethiol)	62.13	2.28	D
Ethylbenzene[a]	106.16	4.61	B
Ethylene dibromide	187.88	0.001	E
Fluorotrichloromethane	137.38	0.76	B
Hexane[a]	86.18	6.57	B
Hydrogen sulfide	34.08	35.5	B
Mercury (total)[a,d]	200.61	2.92×10^{-4}	E

Table 2.4-1. (Concluded)

Compound	Molecular Weight	Default Concentration (ppmv)	Emission Factor Rating
Methyl ethyl ketone[a]	72.11	7.09	A
Methyl isobutyl ketone[a]	100.16	1.87	B
Methyl mercaptan	48.11	2.49	C
Pentane	72.15	3.29	C
Perchloroethylene (tetrachloroethylene)[a]	165.83	3.73	B
Propane	44.09	11.1	B
t-1,2-dichloroethene	96.94	2.84	B
Trichloroethylene (trichloroethene)[a]	131.38	2.82	B
Vinyl chloride[a]	62.50	7.34	B
Xylenes[a]	106.16	12.1	B

NOTE: This is not an all-inclusive list of potential LFG constituents, only those for which test data were available at multiple sites. References 10-67. Source Classification Codes in parentheses.

[a] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[b] Carbon monoxide is not a typical constituent of LFG, but does exist in instances involving landfill (underground) combustion. Therefore, this default value should be used with caution. Of 18 sites where CO was measured, only 2 showed detectable levels of CO.

[c] Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[d] No data were available to speciate total Hg into the elemental and organic forms.

Table 2.4-2. DEFAULT CONCENTRATIONS OF BENZENE, NMOC, AND TOLUENE BASED ON WASTE DISPOSAL HISTORY[a]

(SCC 50100402, 50300603)

Pollutant	Molecular Weight	Default Concentration (ppmv)	Emission Factor Rating
Benzene[b]	78.11		
Co-disposal		11.1	D
No or Unknown co-disposal		1.91	B
NMOC (as hexane)[c]	86.18		
Co-disposal		2420	D
No or Unknown co-disposal		595	B
Toluene[b]	92.13		
Co-disposal		165	D
No or Unknown co-disposal		39.3	A

[a] References 10-54. Source Classification Codes in parentheses.

[b] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[c] For NSPS/Emission Guideline compliance purposes, the default concentration for NMOC as specified in the final rule must be used. For purposes not associated with NSPS/Emission Guideline compliance, the default VOC content at co-disposal sites = 85 percent by weight (2,060 ppmv as hexane); at No or Unknown sites = 39 percent by weight 235 ppmv as hexane).

Table 2.4-3. CONTROL EFFICIENCIES FOR LFG CONSTITUENTS[a]

Control Device	Constituent[b]	Control Efficiency (%)		
		Typical	Range	Rating
Boiler/Steam Turbine (50100423)	NMOC	98.0	96-99+	D
	Halogenated Species	99.6	87-99+	D
	Non-Halogenated Species	99.8	67-99+	D
Flare[c] (50100410) (50300601)	NMOC	99.2	90-99+	B
	Halogenated Species	98.0	91-99+	C
	Non-Halogenated Species	99.7	38-99+	C
Gas Turbine (50100420)	NMOC	94.4	90-99+	E
	Halogenated Species	99.7	98-99+	E
	Non-Halogenated Species	98.2	97-99+	E
IC Engine (50100421)	NMOC	97.2	94-99+	E
	Halogenated Species	93.0	90-99+	E
	Non-Halogenated Species	86.1	25-99+	E

[a] References 10-67. Source Classification Codes in parentheses.
[b] Halogenated species are those containing atoms of chlorine, bromine, fluorine, or iodine. For any equipment, the control efficiency for mercury should be assumed to be 0. See section 2.4.4.2 for methods to estimate emissions of SO_2, CO_2, and HCl.
[c] Where information on equipment was given in the reference, test data were taken from enclosed flares. Control efficiencies are assumed to be equally representative of open flares.

Table 2.4-4. (Metric Units) EMISSION FACTORS FOR SECONDARY COMPOUNDS EXITING CONTROL DEVICES[a]

Control Device	Pollutant[b]	Typical Rate, kg/hr/dscmm Methane	Emission Factor Rating
Flare[c]	Nitrogen dioxide	0.039	C
(50100410)	Carbon monoxide	0.72	C
(50300601)	Particulate matter	0.016	D
IC Engine	Nitrogen dioxide	0.24	D
(50100421)	Carbon monoxide	0.45	C
	Particulate matter	0.046	E
Boiler/Steam Turbine[d]	Nitrogen dioxide	0.032	D
(50100423)	Carbon monoxide	5.4×10^{-3}	E
	Particulate matter	7.9×10^{-3}	D
Gas Turbine	Nitrogen dioxide	0.083	D
(50100420)	Carbon monoxide	0.22	E
	Particulate matter	0.021	E

[a] Source Classification Codes in parentheses.

[b] No data on PM size distributions were available, however for other gas-fired combustion sources, most of the particulate matter is less than 2.5 microns in diameter. Hence, this emission factor can be used to provide estimates of PM-10 or PM-2.5 emissions. See section 2.4.4.2 for methods to estimate CO_2, SO_2, and HCl.

[c] Where information on equipment was given in the reference, test data were taken from enclosed flares. Control efficiencies are assumed to be equally representative of open flares.

[d] All source tests were conducted on boilers, however emission factors should also be representative of steam turbines. Emission factors are representative of boilers equipped with low-NO_x burners and flue gas recirculation. No data were available for uncontrolled NO_x emissions.

Table 2.4-5. (English Units) EMISSION RATES FOR SECONDARY COMPOUNDS EXITING CONTROL DEVICES[a]

Control Device	Pollutant[b]	Typical Rate, lb/hr/dscfm Methane	Emission Factor Rating
Flare[c]	Nitrogen dioxide	2.4×10^{-3}	C
(50100410)	Carbon monoxide	0.045	C
(50300601)	Particulate matter	1.0×10^{-3}	D
IC Engine	Nitrogen dioxide	0.015	D
(50100421)	Carbon monoxide	0.028	C
	Particulate matter	2.9×10^{-3}	E
Boiler/Steam Turbine[d]	Nitrogen dioxide	2.0×10^{-3}	E
(50100423)	Carbon monoxide	3.4×10^{-4}	E
	Particulate matter	4.9×10^{-4}	E
Gas Turbine	Nitrogen dioxide	5.2×10^{-3}	D
(50100420)	Carbon monoxide	0.014	D
	Particulate matter	1.3×10^{-3}	E

[a] Source Classification Codes in parentheses.
[b] Based on data for other combustion sources, most of the particulate matter will be less than 2.5 microns in diameter. Hence, this emission rate can be used to provide estimates of PM-10 or PM-2.5 emissions. See section 2.4.4.2 for methods to estimate CO_2, SO_2, and HCl.
[c] Where information on equipment was given in the reference, test data were taken from enclosed flares. Control efficiencies are assumed to be equally representative of open flares.
[d] All source tests were conducted on boilers, however emission factors should also be representative of steam turbines. Emission factors are representative of boilers equipped with low-NO_x burners and flue gas recirculation. No data were available for uncontrolled NO_x emissions.

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Attachment E

NSPS Emissions

- 1996 – 1998 NMOC Emission Rates

- Tier II Emissions

PAGEL LANDFILL

1996-1998 NONMETHANE ORGANIC COMPOUNDS EMISSION RATE REPORT FOR NEW SOURCE PERFORMANCE STANDARDS

Prepared for

Winnebago Reclamation Service, Inc.

Winnebago County, Illinois

January 7, 1999

PAGEL LANDFILL

1996-1998 NONMETHANE ORGANIC COMPOUNDS EMISSION RATE REPORT FOR NEW SOURCE PERFORMANCE STANDARDS

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APPENDICES

PAGEL LANDFILL

1996-1998 NONMETHANE ORGANIC COMPOUNDS EMISSION RATE REPORT FOR NEW SOURCE PERFORMANCE STANDARDS

INTRODUCTION

Pursuant to 40 CFR 60.752-- New Source Performance Standards (NSPS) for municipal solid waste landfills (MSWLFs) -- any landfill with a design capacity greater than 2,500,000 m^3 and 2,500,000 Mg must submit annual nonmethane organic compound (NMOC) emission rate report(s). Furthermore, those landfills which demonstrate an annual NMOC emission rate greater than 50 Mg/yr are required to either recalculate the NMOC emission rate using a site-specific NMOC concentration or submit plans for a gas collection system.

DESIGN CAPACITY

The waste design capacity for Winnebago Reclamation Service, Inc. (WRS) - Pagel Landfill was taken from the document submitted to IEPA June 10, 1996, *"Initial Design Capacity and Nonmethane Organic Compounds Emission Rate Reports"* (IDCR), see Appendix A. The resulting design capacity for the facility was determined to be 8,530,000 cy (6,522,000 m^3 and 4,645,000 Mg); therefore, WRS - Pagel Landfill is required to submit annual NMOC emission rate report(s). It has been somewhat unclear whether one report with conservative assumptions may cover several years, or if separate reports are required annually.

NMOC EMISSION RATE

The annual NMOC emission rates for the facility was determined by use of U.S. EPA's *Landfill Gas Emissions Model, version 2.01.* This model uses standard defaults for equations found in 40 CFR 60.754, together with annual solid waste acceptance rates (Appendix B), to calculate annual NMOC emissions from MSWLFs.

Pagel Landfill began accepting waste in 1972 and has provided annual waste mass acceptance rates for 1995 -1998, see Appendix B. Records of waste placement prior to 1995 were not available for this analysis. However, volume calculations from the IEPA - Department of Land Pollution Control (DLPC) *"Application for Significant Modification to Permit for an Existing Unit"* - IEPA Site No. 2018080001, May, 1996, Log. 1995-250, Vol. II of II, Attachment 23 were used to determine the total amount of in-place waste, see Appendix C. For the end of 1995, the remaining refuse capacity is estimated at 1,442,200 cy. At the end of 1995 (or beginning of 1996), the total net volume of in-place waste for the "existing unit" was determined to be 2,794,680 tons, see Appendix C.

In order to determine the average annual acceptance rate prior to 1995, the total waste in-place through 1995 was divided evenly for the years 1972 thru 1994. The average annual acceptance rates for 1972-1994 were found to be 109,846 tons/yr (99,650 Mg/yr), see Appendix C. The annual waste acceptance rates were used in the estimation model.

Results of the emissions estimation model (Appendix D) indicate that for the years ending 1996 through 1998, NMOC emission rates are between 430 Mg/yr and 520 Mg/yr. These values are above the maximum emission rate of 50 Mg/yr NMOC. Therefore, according to the NSPS regulations, Pagel Landfill is required to either recalculate the NMOC emission rate using a site-specific NMOC concentration, or

submit plans for a gas collection system within one year of submittal of ~~this design capacity~~ report. the 1st NMOC above 50 mg/yr.

Illinois EPA air pollution control permits are currently active for the gas collection system and associated equipment. The permitted equipment has been installed and is currently either being utilized, or undergoing maintenance or improvements.

EMCON
1414 South 5th Street • Suite 200 • Springfield, Illinois 62703 • (217) 492-9450 • Fax (217) 492-9453

September 25, 1997
Project 86078-003.002

Mr. Thomas Hilbert
Winnebago Reclamation Service, Inc.
8403 Lindenwood Road
Rockford, Illinois 61109

Re: Pagel Landfill
Tier 2 Landfill Gas Testing Results

Dear Tom:

EMCON has completed Tier 2 landfill gas testing at your Pagel Landfill Facility. Thirty-five samples, including 12 from existing gas extraction wells and 23 from probe holes, were collected by TEG-Midwest, Inc. The samples were composited into eight Summa® Canisters and shipped to Quanterra Environmental Services in City of Industry, California where they were analyzed in accordance with EPA Method 25C and EPA Method 3C.

When corrected for moisture and nitrogen content, the samples yielded a weighted-composite Non-methane Organic Compound (NMOC) concentration of **924 ppm** as hexane (C_6). Unfortunately, this value is not low enough to release your facility from the gas collection and control system requirements detailed in the New Source Performance Standards (NSPS) for municipal waste landfills. When substituted into the Tier 1 emission equation, the site-specific NMOC concentration yields a NMOC emission rate of **90.3 Mg/yr**, greater than the NMOC emission threshold of 50 Mg/yr.

Since the NMOC emission rate can not be demonstrated to be below the threshold, it is not necessary to submit the test results to the Illinois Environmental Protection Agency (IEPA) or to USEPA. Therefore, we have discontinued further work on the summary report, and will bill you only for services tendered thus far. I have enclosed a copy of the analytical results and a data summary for your files.

In terms of NSPS compliance, your options now include 1) conducting a Tier 3 landfill gas test, or 2) submitting a Gas Collection and Control System (GCCS) design plan. We do not recommend performing the Tier 3 test because it is expensive and does not typically yield significantly better results than the Tier 2 test. Preparation of a GCCS design plan involves the submittal of landfill gas system design drawings plus a narrative describing the operation and monitoring procedures and demonstrating that the design

meets all the requirements of the NSPS. For a facility such as yours where the design plans are already complete, preparation of the GCCS design plan typically costs about $6,000.

Please contact me if you have any questions or comments. I would be happy to provide you with a detailed proposal to submit a GCCS design plan for your facility, if that is the option that you choose.

Sincerely,

EMCON

Edward M. Leigh, P.E.
Project Engineer

Attachments: Analytical Results
Data Summary

cc: Dan Feezor, EMCON
Tom Bilgri, EMCON

PAGEL LANDFILL CAPPING PROJECT 7-97

Project: pagel797
Point statistics:
Starting point number: 1
Current point number: 1

Thu Aug 21 08:06:17 1997

('L' indicates locked point)

Current Coordinate Listing by Search Desc: TT*

Point	Northing	Easting	Elevation	Description
1786	2001764.6452	800359.0757		TT 13
1787	2001975.1285	800343.3803		TT 12
1788	2001973.7812	800161.0074		TT 7
1789	2001977.6286	800039.1679		TT 3
1790	2001993.6812	799960.3741		TT 1
1791	2001861.4406	799989.4940		TT 2
1792	2001844.7282	800083.2810		TT 6
1793	2001785.9510	800166.7403		TT 8
1794	2001819.7450	800260.4087		TT 11
1795	2001531.2299	800334.9353		TT 14
1796	2001669.1342	800271.2256		TT 10
1797	2001601.9533	800189.7099		TT 9
1798	2001668.7545	800063.2052		TT 5
1799	2001771.8106	800033.7154		TT 4

TT= Tier 2 testing location

Pagel Landfill
Rockford, Illinois

Compilation of Tier II NMOC Test Data

Sample Number	*Sampling Points*	*Measured NMOC Conc. (ppmv as C)*	*Moisture Content (vol/vol)*	*Nitrogen Content (vol/vol)*	*Corrected NMOC Conc. (ppmv as C)*	*Number of Points*	*Composite NMOC Concentration (ppmv as C)*
93136	1, 6, 8, 11, 13	5,500	0.026	0.000	5,647	5	28,234
11282	103, 113, 123, 134	1,200	0.026	0.160	1,474	4	5,897
9568BB	100, 101, 102, 110	1,500	0.026	0.000	1,540	4	6,160
92007	120, 130, 140, 150	1,700	0.026	0.000	1,745	4	6,982
12894	4, 5, 9, 10, 14	5,600	0.026	0.000	5,749	5	28,747
64678	2, 3, 7, 12, 17	10,000	0.026	0.050	10,823	5	54,113
04411	15, 18, 26, 21	6,200	0.026	0.000	6,366	4	25,462
02699	17, 19, 22, 23	9,100	0.026	0.027	9,609	4	38,437
Totals						**35**	**194,032**

Weighted Composite NMOC Concentration (ppmv as Carbon) **5,544**

Weighted Composite NMOC Concentration (ppmv as Hexane) **924**

*Moisture content calculated per EPA Method 25C assuming a landfill gas temperature of 22 deg C (72 deg F) and standard atmospheric pressure.

APPENDIX B

IEPA PART 70 PERMIT APPLICATION FORMS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

CAAPP FORMS

COMPANY NAME: Pagel Landfill

ADDRESS: 8403 Lindenwood Road

CITY, STATE, ZIP: Rockford, Illinois 61109

PHONE # : (815) 874-4806 EXT: _____ DATE: ____ / ____ / ____

____ 209-CAAPP REQUEST FOR CAAPP FORMS (REVISED 11/16/94)
__X__ 200-CAAPP APPLICATION FOR CAAPP PERMIT* (REVISED 11/16/94)
____ 202-CAAPP GENERAL INSTRUCTIONS FOR CAAPP APPLICATIONS (REVISED 11/16/94)
__X__ 260-CAAPP AIR POLLUTION CONTROL EQUIPMENT (REVISED 11/16/94)

____ A. ADSORBER
____ B. AFTERBURNER
____ C. FILTER
____ D. CYCLONE
____ E. CONDENSER
____ F. ELECTROSTATIC PRECIPITATOR
____ G. PACKED SCRUBBER
____ H. SCRUBBER
____ I. NOX CONTROL
__X__ J. FLARE
__X__ K. OTHER

EMISSION UNIT FORMS

__X__ 220-CAAPP PROCESS EMISSION UNIT (REVISED 11/16/94)
____ 240-CAAPP FUEL COMBUSTION EMISSION UNIT (REVISED 11/16/94)
____ 250-CAAPP INCINERATOR (REVISED 11/16/94)
____ 270-CAAPP STATIONARY INTERNAL COMBUSTION ENGINE OR TURBINE (REVISED 11/16/94)

STAND ALONE FORMS

____ 232-CAAPP STORAGE TANK (REVISED 11/16/94)
____ 234-CAAPP HOT MIX ASPHALT PLANT (REVISED 11/16/94)
____ 235-CAAPP AGGREGATE CRUSHING PLANT (REVISED 11/16/94)
____ 236-CAAPP GRAIN HANDLING AND GRAIN DRYING (REVISED 11/16/94)
____ 237-CAAPP PERCHLORETHYLENE DRY CLEANING (REVISED 11/16/94)
____ 358-CAAPP SOLVENT CLEANING - OPEN TOP VAPOR DEGREASER (REVISED 11/16/94)
____ 366-CAAPP SOLVENT CLEANING - CONVEYORIZED DEGREASER (REVISED 11/16/94)
____ 367-CAAPP SOLVENT CLEANING - COLD CLEANING (REVISED 11/16/94)

SUPPLEMENTAL FORMS

____ 301-CAAPP COATING OPERATION (REVISED 11/16/94)
____ 302-CAAPP PRINTING AND PUBLISHING (REVISED 11/16/94)
____ 336-CAAPP ELECTROPLATING TANK (REVISED 11/16/94)
____ 236A-CAAPP GRAIN HANDLING AND GRAIN DRYING EMISSION CALCULATION SHEET (REVISED 11/16/94)

VARIOUS FORMS

__X__ 297-CAAPP LISTING OF INSIGNIFICANT ACTIVITIES (REVISED 11/16/94)
__X__ 391-CAAPP FUGITIVE EMISSIONS (REVISED 11/16/94)
__X__ 215-CAAPP HAZARDOUS AIR POLLUTANT EMISSION SUMMARY (REVISED 11/16/94)
__X__ 293-CAAPP COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE FOR CAAPP PERMIT (REVISED 11/16/94)
__X__ 294-CAAPP COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE-ADDENDUM FOR NONCOMPLIANT EMISSION UNITS - (REVISED 11/16/94)
__X__ 296-CAAPP COMPLIANCE CERTIFICATION (REVISED 11/16/94)
__X__ 292-CAAPP FEE DETERMINATION FOR CAAPP PERMIT (REVISED 11/16/94)
____ 295-CAAPP CERTIFIED PROGRESS REPORT* (REVISED 11/16/94)
____ 203-CAAPP REQUEST TO OPERATE WITH EXCESS EMISSIONS DURING STARTUP OF EQUIPMENT (REVISED 11/16/94)
____ 204-CAAPP REQUEST TO CONTINUE TO OPERATE DURING MALFUNCTION OR BREAKDOWN (REVISED 11/16/94)
____ 271-CAAPP MINOR PERMIT MODIFICATION FOR CAAPP PERMIT* (REVISED 11/16/94)
____ 272-CAAPP REQUEST FOR OWNERSHIP CHANGE FOR CAAPP PERMIT* (REVISED 11/16/94)
____ 273-CAAPP REQUEST FOR ADMINISTRATIVE PERMIT AMENDMENT FOR CAAPP PERMIT* (REVISED 11/16/94)
____ 400-CAAPP COMPLIANCE AND GENERAL REPORTING FORM* (REVISED 11/16/94)
____ 405-CAAPP EXCESS EMISSIONS, MONITORING EQUIPMENT DOWNTIME, AND MISC. REPORTING FORM* - (REVISED 11/16/94)
____ 161-CAAPP STANDARD CONDITIONS (REVISED 11/16/94)
____ 500-CAAPP DELEGATION OF AUTHORITY FOR RESPONSIBLE OFFICIAL TO A REPRESENTATIVE* (REVISED 11/16/94)
____ 505-CAAPP SUPPLEMENT TO CAAPP APPLICATION* (REVISED 11/16/94)

REGULATIONS

____ STATE OF ILLINOIS RULES AND REGULATIONS (AIR POLLUTION)
____ ILLINOIS ENVIRONMENTAL PROTECTION ACT

COPIES OF FEDERAL RULES MAY BE OBTAINED FROM U.S. EPA - REGION V, 77 WEST JACKSON BOULEVARD, CHICAGO, IL. 60604 - (312) 353-2000.

*SIGNATURE REQUIRED ON FORM

FORMS MAY BE COPIED BY THE APPLICANT AS NECESSARY

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: _____
Date: ____ / ____ / ____
Page _____ of _____
Source Designation:
_____

APPLICATION FOR CAAPP PERMIT
(CHECK ONLY ONE)

- [X] INITIAL APPLICATION
- [ ] RENEWAL APPLICATION
- [ ] SIGNIFICANT MODIFICATION

FOR AGENCY USE ONLY
ID NUMBER:
PERMIT #:
DATE:

SOURCE INFORMATION

1) SOURCE NAME: Pagel Landfill
2) DATE FORM COMPLETED:
3) SOURCE STREET ADDRESS: 8403 Lindenwood Road
4) CITY: Rockford
5) ZIP: 61109
6) IS THE SOURCE LOCATED WITHIN CITY LIMITS? [ ] YES [X] NO
7) TOWNSHIP NAME: 36
8) COUNTY: Winnebago
9) TYPICAL NO. OF EMPLOYEES AT THE SOURCE:
10) ILLINOIS AIR POLLUTION SOURCE ID NO. (IF KNOWN): 201-801-AAF and 201-808-ADB
11) FEDERAL EMPLOYER IDENTIFICATION NO. (FEIN): 338-36-5052
12) TYPE OF SOURCE AND PRODUCTS PRODUCED: Landfill & Sludge Dryer
13) PRIMARY STANDARD INDUSTRIAL CLASSIFICATION (SIC) CATEGORY: Trans. & Utilities - Refuse Systems
14) PRIMARY SIC NO.: 4953
15a) LATITUDE (DD:MM:SS):
b) LONGITUDE (DD:MM:SS):
16a) UTM ZONE:
b) UTM VERTICAL (KM):
c) UTM HORIZONTAL (KM):
17a) COORDINATE METHOD:
b) REFERENCE LOCATION:
c) COORDINATE ACCURACY:
18) SOURCE ENVIRONMENTAL CONTACT PERSON: Thomas Hilbert
19) CONTACT PERSON'S TELEPHONE NO.: 815-874-4806

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

FOR APPLICANT'S USE
_____

APPLICATION PAGE _____

OWNER INFORMATION		
20) NAME: Winnebago Reclamation Service, Inc.		
21) ADDRESS: 4920 Forest Hills Road		
22) CITY: Loves Park	23) STATE: Illinois	24) ZIP: 61111
25) OWNER'S AGENT (IF APPLICABLE): Gary L. Marzorati		

OPERATOR INFORMATION		
26) NAME: Winnebago Reclamation Service, Inc.		
27) ADDRESS: 4920 Forest Hills Road		
28) CITY: Loves Park	29) STATE: Illinois	30) ZIP: 61111

BILLING INFORMATION		
31) NAME: Winnebago Reclamation Service, Inc.		
32) ADDRESS: 4920 Forest Hills Road		
33) CITY: Loves Park	34) STATE: Illinois	35) ZIP: 61111
36) CONTACT PERSON: Gary L. Marzorati	37) CONTACT PERSON'S TELEPHONE NO.:	

APPLICANT INFORMATION	
38) WHO IS THE PERMIT APPLICANT? (CHECK ONE): ☒ OWNER ☐ OPERATOR	39) ALL CORRESPONDENCE TO: (CHECK ONE) ☒ OWNER ☐ OPERATOR ☐ SOURCE
40) ATTENTION NAME AND/OR TITLE FOR WRITTEN CORRESPONDENCE: Gary L. Marzorati	
41) TECHNICAL CONTACT PERSON FOR APPLICATION: Thomas Hilbert	42) CONTACT PERSON'S TELEPHONE NO.: 815-874-4806

SUMMARY OF APPLICATION CONTENTS

NOTE: ITEMS 43 TO 61 WILL BE USED FOR APPLICATION COMPLETENESS DETERMINATION.

43)	DOES THE APPLICATION INCLUDE A TABLE OF CONTENTS?	☒ YES ☐ NO
44)	DOES THE APPLICATION INCLUDE A LIST OF ALL ITEMS AND ACTIVITIES FOR WHICH A PERMIT IS BEING SOUGHT?	☒ YES ☐ NO
45)	DOES THE APPLICATION INCLUDE A PLOT PLAN AND/OR MAP DEPICTING THE AREA WITHIN ONE-QUARTER MILE OF THE SOURCE?	☒ YES ☐ NO
46)	DOES THE APPLICATION INCLUDE A PROCESS FLOW DIAGRAM(S) SHOWING ALL EMISSION UNITS AND CONTROL EQUIPMENT, AND THEIR RELATIONSHIP?	☒ YES ☐ NO
47)	DOES THE APPLICATION INCLUDE A COMPLETE PROCESS DESCRIPTION FOR THE SOURCE?	☒ YES ☐ NO
48a)	DOES THE APPLICATION INCLUDE THE APPROPRIATE, COMPLETED FORMS FOR ALL INDIVIDUAL EMSSION UNITS AND AIR POLLUTION CONTROL EQUIPMENT, LISTING ALL APPLICABLE REQUIREMENTS AND PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE REQUIREMENTS?	☒ YES ☐ NO
b)	DOES THE APPLICATION ADDRESS OTHER MODES OF OPERATION FOR WHICH A PERMIT IS BEING SOUGHT?	☐ *NA ☒ YES ☐ NO *NOTE: NOT APPLICABLE
c)	DOES THE APPLICATION INCLUDE ALL REASONABLY ANTICIPATED OPERATING SCENARIOS FOR WHICH A PERMIT IS BEING SOUGHT?	☐ *NA ☒ YES ☐ NO *NOTE: NOT APPLICABLE
49)	DOES THE APPLICATION INCLUDE A COMPLETED "FUGITIVE EMISSION" FORM 391-CAAPP?	☒ YES ☐ NO
50)	DOES THE APPLICATION INCLUDE A COMPLETED "FEE DETERMINATION FOR CAAPP PERMIT" FORM 292-CAAPP? (NOTE: FEES WILL BE BASED UPON INFORMATION CONTAINED IN THIS FORM.)	☒ YES ☐ NO
51)	DOES THE APPLICATION INCLUDE A COMPLETED "HAZARDOUS AIR POLLUTANT EMISSION SUMMARY" FORM 215-CAAPP?	☒ YES ☐ NO
52)	DOES THE APPLICATION INCLUDE THE CALCULATIONS ON WHICH THE FOLLOWING, TO THE EXTENT THEY ARE RELATED TO AIR EMISSIONS, WERE BASED: • POLLUTANT EMISSION RATES, • FUELS AND RAW MATERIALS USAGE, AND • CONTROL EQUIPMENT EFFICIENCY?	☒ YES ☐ NO
53)	DOES THE APPLICATION INCLUDE A COMPLETED "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE FOR CAAPP PERMIT" FORM 293-CAAPP?	☒ YES ☐ NO

54) DOES THE APPLICATION INCLUDE A COMPLETED "COMPLIANCE CERTIFICATION" FORM 296-CAAPP?	☒ YES ☐ NO
55) DOES THE APPLICATION INCLUDE A COMPLETED "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE-ADDENDUM FOR NONCOMPLYING EMISSION UNITS" FORM 294-CAAPP FOR ONE OR MORE NONCOMPLIANT EMISSION UNITS FOR WHICH ISSUANCE OF A CAAPP PERMIT IS REQUESTED?	☐ *NA ☒ YES ☐ NO *NOTE: NOT APPLICABLE
56) HAS THE APPLICANT RETAINED A COPY OF THIS APPLICATION AT THE SOURCE? (NOTE: ONLY THE ORIGINAL APPLICATION NEED BE INITIALLY SUBMITTED, HOWEVER, THE AGENCY MAY REQUEST UP TO 4 COPIES OF THE FINAL APPLICATION PRIOR TO PUBLIC NOTICE.)	☒ YES ☐ NO
57a) DOES THE APPLICATION CONTAIN CONFIDENTIAL INFORMATION?	☐ YES ☒ NO
b) IF YES, HAS SUCH INFORMATION BEEN PROPERLY MARKED AND CLAIMED, AND COPIES OF THE APPLICATION SUITABLE FOR PUBLIC INSPECTION BEEN SUBMITTED, IN ACCORDANCE WITH APPLICABLE REGULATIONS?	☐ YES ☐ NO
58) DOES THE APPLICATION INCLUDE AN EARLY REDUCTION DEMONSTRATION FOR HAZARDOUS AIR POLLUTANTS (HAP) PURSUANT TO SECTION 112(i)(5) OF THE CLEAN AIR ACT AS AMENDED IN 1990?	☒ *NA ☐ YES ☐ NO *NOTE: NOT APPLICABLE
59) DOES THE APPLICATION INCLUDE A PROPOSED DETERMINATION OF MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (MACT) FOR HAZARDOUS AIR POLLUTANTS PURSUANT TO SECTION 112 OF THE CLEAN AIR ACT AS AMENDED IN 1990?	☒ *NA ☐ YES ☐ NO *NOTE: NOT APPLICABLE
60) HAS THE APPLICANT REGISTERED A RISK MANAGEMENT PROGRAM FOR ACCIDENTAL RELEASES PURSUANT TO SECTION 112(r) OF THE CLEAN AIR ACT AS AMENDED IN 1990 OR INTENDS TO COMPLY WITH THIS REQUIREMENT IN ACCORDANCE WITH ITS COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE?	☒ *NA ☐ YES ☐ NO *NOTE: NOT APPLICABLE
61) DOES THE APPLICATION REQUEST TO UTILIZE THE OPERATIONAL FLEXIBILITY PROVISIONS AND INCLUDE THE INFORMATION REQUIRED FOR SUCH USE?	☒ YES ☐ NO

62a) DOES THE APPLICANT HEREBY REQUEST A PERMIT SHIELD FOR THE ENTIRE SOURCE?	☒ YES ☐ NO
b) IF NO, DOES THE APPLICATION CONTAIN A REQUEST FOR A PERMIT SHIELD FOR SPECIFIC ITEMS ONLY, IN ACCORDANCE WITH THE INSTRUCTIONS FOR A CAAPP PERMIT?	☒ YES ☐ NO
63) DOES THE APPLICATION INCLUDE A COMPLETED "LISTING OF INSIGNIFICANT ACTIVITIES" FORM 297-CAAPP?	☒ YES ☐ NO

64) WHY IS THE APPLICANT APPLYING FOR A CAAPP PERMIT (CHECK ALL THAT APPLY)?

☐ THE POTENTIAL TO EMIT ONE OR MORE AIR POLLUTANTS FOR THE SOURCE IS 100 TONS/YEAR OR GREATER.

☐ THE SOURCE IS AN AFFECTED SOURCE FOR ACID RAIN DEPOSITION.

☐ THE POTENTIAL TO EMIT VOM OR NOx IS 25 TONS/YEAR OR MORE AND THE SOURCE IS LOCATED IN ONE OF THE FOLLOWING CHICAGO AREA COUNTIES OR TOWNSHIPS:

- COOK COUNTY
- DUPAGE COUNTY
- KANE COUNTY
- LAKE COUNTY
- McHENRY COUNTY
- WILL COUNTY
- AUX SABLE TOWNSHIP, GRUNDY COUNTY
- GOOSE LAKE TOWNSHIP, GRUNDY COUNTY
- OSWEGO TOWNSHIP, KENDALL COUNTY

☐ THE POTENTIAL TO EMIT AN INDIVIDUAL HAZARDOUS AIR POLLUTANT IS 10 TONS/YEAR OR MORE, OR THE POTENTIAL TO EMIT ALL SOURCE WIDE HAZARDOUS AIR POLLUTANTS IS 25 TONS/YEAR OR MORE, OR MEETS AN APPLICABLE LOWER THRESHOLD.

☒ THE SOURCE CONTAINS EQUIPMENT OR OPERATIONS SUBJECT TO CERTAIN USEPA EMISSION STANDARDS (NSPS AND NESHAP) FOR WHICH USEPA REQUIRES A CAAPP PERMIT.

65) DOES THE APPLICATION INCLUDE A DRAWING PROVIDING THE SOURCE LAYOUT? ☒ YES ☐ NO

IF NO, PLEASE NOTE THAT THE AGENCY MAY REQUEST SUCH A DRAWING UPON DETAILED REVIEW OF THE APPLICATION.

66a) ARE ACTUAL EMISSIONS OF THE SOURCE BELOW THE APPLICABILITY LEVELS FOR A CAAPP PERMIT? ☒ YES ☐ NO

b) DOES THE APPLICATION CONTAIN PROPOSED PERMIT LIMITATIONS THAT WILL CONSTRAIN THE EMISSIONS AND PRODUCTION OR OPERATION OF THE SOURCE SUCH THAT POTENTIAL EMISSIONS OF THE SOURCE WILL FALL BELOW THE LEVELS FOR WHICH A CAAPP PERMIT IS REQUIRED? ☐ YES ☒ NO

c) DOES THE APPLICANT HEREBY REQUEST A FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP) CONSTRAINING THE EMISSIONS AND PRODUCTION OR OPERATION OF THE SOURCE SUCH THAT POTENTIAL EMISSIONS WOULD FALL BELOW APPLICABILITY LEVELS AND THEREBY EXCLUDE THE SOURCE FROM REQUIRING A CAAPP PERMIT? ☐ YES ☒ NO

67) FOR SIGNIFICANT MODIFICATIONS, DOES THE APPLICATION INCLUDE A DESCRIPTION OF THE PROPOSED CHANGE(S), INCLUDING ALL PHYSICAL CHANGES IN EQUIPMENT, CHANGES IN THE METHOD OF OPERATION, CHANGES IN EMISSIONS, AND ANY NEW APPLICABLE REQUIREMENTS WHICH WILL APPLY AS A RESULT OF THE PROPOSED CHANGE? ☐ YES ☒ NO

SIGNATURE BLOCK

NOTE: THIS CERTIFICATION MUST BE SIGNED BY A RESPONSIBLE OFFICIAL. APPLICATIONS WITHOUT A SIGNED CERTIFICATION WILL BE RETURNED AS INCOMPLETE.

68) I CERTIFY UNDER PENALTY OF LAW THAT, BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION CONTAINED IN THIS APPLICATION ARE TRUE, ACCURATE AND COMPLETE.

AUTHORIZED SIGNATURE:

BY: _____
AUTHORIZED SIGNATURE

Environmental Engineer
TITLE OF SIGNATORY

Thomas Hilbert
TYPED OR PRINTED NAME OF SIGNATORY

02 / 22 / 99
DATE

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: _____
Date: ____ / ____ / ____
Page _____ of _____
Source Designation: _____

AIR POLLUTION CONTROL EQUIPMENT DATA AND INFORMATION	***FOR AGENCY USE ONLY***
	ID NUMBER:
	CONTROL EQUIPMENT #:
	DATE:

THIS FORM MUST BE COMPLETED FOR EACH AIR POLLUTION CONTROL EQUIPMENT. COMPLETE AND PROVIDE THIS FORM IN ADDITION TO THE APPLICABLE ADDENDUM FORM 260-A THROUGH 260-K. A SEPARATE FORM MUST BE COMPLETED FOR EACH MODE OF OPERATION OF AIR POLLUTION CONTROL EQUIPMENT FOR WHICH A PERMIT IS BEING SOUGHT.

SOURCE INFORMATION	
1) SOURCE NAME: PAGEL LANDFILL	
2) DATE FORM PREPARED:	3) SOURCE ID NO. (IF KNOWN): 201-801-AAF & 201-808-ADB

GENERAL INFORMATION	
4) NAME OF AIR POLLUTION CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: LANDFILL GAS COLLECTION, FLARE & SLUDGE DRYER	
5) FLOW DIAGRAM DESIGNATION OF CONTROL EQUIPMENT AND/OR CONTROL SYSTEM:	
6) MANUFACTURER OF CONTROL EQUIPMENT (IF KNOWN):	
7) MODEL NUMBER (IF KNOWN):	8) SERIAL NUMBER (IF KNOWN):
9) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EQUIPMENT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR):
	b) OPERATION (MONTH/YEAR):
	c) LATEST MODIFICATION (MONTH/YEAR):
10) BRIEFLY DESCRIBE MODIFICATION (IF APPLICABLE):	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

FOR APPLICANT'S USE
_____

APPLICATION PAGE _____

11) LIST ALL EMISSION UNITS AND OTHER CONTROL EQUIPMENT DUCTING EMISSIONS TO THIS CONTROL EQUIPMENT:

NAME	DESIGNATION OR CODE NUMBER

12) DOES THE CONTROL EQUIPMENT HAVE MORE THAN ONE MODE OF OPERATION? ☒ YES ☐ NO

IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE AIR POLLUTION CONTROL EQUIPMENT FORM 260-CAAPP MUST BE COMPLETED FOR EACH MODE):

see 260j and 260K

13) IDENTIFY ALL ATTACHMENTS TO THIS FORM RELATED TO THIS AIR POLLUTION CONTROL EQUIPMENT(E.G., TECHNICAL DRAWINGS):

OPERATING SCHEDULE

14) IDENTIFY ANY PERIOD WHEN THE CONTROL EQUIPMENT WILL NOT BE OPERATING DUE TO SCHEDULED MAINTENANCE AND/OR REPAIRS WHEN THE FEEDING EMISSION UNIT(S) TO THIS CONTROL EQUIPMENT IS/ARE IN OPERATION:

15a) IDENTIFY ANY PERIODS DURING OPERATION OF THE FEEDING EMISSION UNIT(S) WHEN THE CONTROL EQUIPMENT IS/ARE NOT USED:

b) IS THIS CONTROL EQUIPMENT IN OPERATION AT ALL OTHER TIMES THAT THE FEEDING EMISSION UNIT(S) IS/ARE IN OPERATION? ☒ YES ☐ NO

IF NO, EXPLAIN AND PROVIDE THE DURATION OF THE CONTROL EQUIPMENT DOWNTIME:

APPLICABLE RULES

16) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.207(b)(1), 81% OVERALL & 90% CONTROL DEVICE EFF.):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

17) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)

18) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)

19) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)

20) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)

COMPLIANCE INFORMATION

21) IS THE CONTROL SYSTEM IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? ☒ YES ☐ NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE – ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

22) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

23) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

NSPS Municipal Solid Waste Landfill Gas Control & Monitoring System

TESTING, MONITORING, RECORDKEEPING AND REPORTING

24a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY

24b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON

c) IS COMPLIANCE OF THE CONTROL EQUIPMENT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? ☒ YES ☐ NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND/OR SUBMITTAL TO THE AGENCY UPON REQUEST? ☒ YES ☐ NO

IF NO, EXPLAIN:

25a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

b) WHAT OPERATING PARAMETER(S) IS(ARE) BEING MONITORED (E.G., COMBUSTION CHAMBER TEMPERATURE)?

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., EXIT OF COMBUSTION CHAMBER):

25d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? [X] YES [ ] NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:

Following NSPS, 40 CFR Subpart WWW.

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? [X] YES [ ] NO

IF NO, EXPLAIN:

Following NSPS, 40 CFR Subpart WWW.

f) IS EACH MONITOR OPERATED AT ALL TIMES THE CONTROL EQUIPMENT IS IN OPERATION? [X] YES [ ] NO

IF NO, EXPLAIN:

Following NSPS, 40 CFR Subpart WWW.

26) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-1:

TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS

27) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY

CAPTURE AND CONTROL

28) DESCRIBE THE CAPTURE SYSTEM USED TO CONTAIN, COLLECT AND TRANSPORT EMISSIONS TO THE CONTROL EQUIPMENT. INCLUDE ALL HOODS, DUCTS, FANS, ETC. ALSO INCLUDE THE METHOD OF CAPTURE USED AT EACH EMISSION POINT. (IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-2):

29) ARE FEATURES OF THE CAPTURE SYSTEM ACCURATELY DEPICTED IN THE FLOW DIAGRAM CONTAINED IN THIS APPLICATION? [X] YES [ ] NO

IF NO, A SKETCH SHOWING THE FEATURES OF THE CAPTURE SYSTEM SHOULD BE ATTACHED AND LABELED AS EXHIBIT 260-3:

30) PROVIDE THE ACTUAL (MINIMUM AND TYPICAL) CAPTURE SYSTEM EFFICIENCY, CONTROL EQUIPMENT DESTRUCTION/REMOVAL EFFICIENCY, AND THE OVERALL REDUCTION EFFICIENCY PROVIDED BY THE COMBINATION OF THE CAPTURE SYSTEM AND CONTROL EQUIPMENT FOR EACH REGULATED AIR POLLUTANT TO BE CONTROLLED. ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH THESE EFFICIENCIES WERE BASED AND LABEL AS EXHIBIT 260-4:

a) CONTROL PERFORMANCE:

	REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)		CONTROL EQUIPMENT EFFICIENCY (%)		OVERALL REDUCTION EFFICIENCY (%)	
		(MIN)	(TYP)	(MIN)	(TYP)	(MIN)	(TYP)
i							
ii							
iii							

iv. EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:

Following NSPS, 40 CFR Subpart WWW.

b) METHOD USED TO DETERMINE EACH OF THE ABOVE EFFICIENCIES (E.G., STACK TEST, MATERIAL BALANCE, MANUFACTURER'S GUARANTEE, ETC.) AND THE DATE LAST TESTED, IF APPLICABLE:

	EFFICIENCY DETERMINATION METHOD	DATE LAST TESTED
CAPTURE:		
CONTROL:		
OVERALL:		

c) REQUIRED PERFORMANCE:

	REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)	CONTROL EQUIPMENT EFFICIENCY (%)	OVERALL REDUCTION EFFICIENCY (%)	APPLICABLE RULE
i					
ii					
iii					

iv EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:

(31)EMISSION INFORMATION

REGULATED AIR POLLUTANT		[1]ACTUAL EMISSION RATE					ALLOWABLE BY RULE EMISSION RATE			[2]PERMITTED EMISSION RATE	
		LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[3]OTHER TERMS	[4]DM	[5]RATE (UNITS)	APPLICABLE RULES	TONS PER YEAR (TONS/YR)	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM:						( )				
	TYPICAL:						( )				
LEAD	MAXIMUM:						( )				
	TYPICAL:						( )				
NITROGEN OXIDES (NOx)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER (PART)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM:						( )				
	TYPICAL:						( )				
SULFUR DIOXIDE (SO2)	MAXIMUM:						( )				
	TYPICAL:						( )				
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM:						( )				
	TYPICAL:						( )				
OTHER, SPECIFY: _____	MAXIMUM:						( )				
	TYPICAL:						( )				
EXAMPLE: PARTICULATE MATTER	MAXIMUM:	*5.00*	*21.9*	*0.3 GR/DSCF*		*1*	*6.0 (LBS/HR)*	*212.321*	*26.28*	*5.5 LBS/HR*	*22*
	TYPICAL:	*4.00*	*14.4*	*0.24 GR/DSCF*		*4*	*5.5 (LBS/HR)*	*212.321*	*19.80*		

See Appendix A

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-5.

[1]PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).
[2]PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
[5]RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

(32) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION

HAP INFORMATION		[1]ACTUAL EMISSION RATE					ALLOWABLE BY RULE	
NAME OF HAP EMITTED	[2]CAS NUMBER		POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[4]DM	[5]RATE OR STANDARD	APPLICABLE RULE
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
EXAMPLE:		MAXIMUM:	*10.0*	*1.2*		*2*	*98% by wt control device*	*CFR 61*
Benzene	*71432*	TYPICAL:	*8.0*	*0.8*		*2*	*leak-tight trucks*	*61.302(b),(d)*

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-6.

[1]PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).
[2]CAS - CHEMICAL ABSTRACT SERVICE NUMBER.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G., PPM, GR/DSCF, ETC.).
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS, 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).
[5]RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION		
33) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS.		
34) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):		
35) DISCHARGE HEIGHT ABOVE GRADE (FT):		
36) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):		
37) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA.		
38) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM):	b) TYPICAL (ACFM):
39) EXIT GAS TEMPERATURE	a) MAXIMUM (°F):	b) TYPICAL (°F):
40) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):		

41) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:

	NAME	FLOW DIAGRAM DESIGNATION
a)		
b)		
c)		
d)		
e)		
f)		
g)		

42) WHAT PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS ARE BEING DUCTED TO THIS EXHAUST POINT (%)?
43) IF THE PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS BEING DUCTED TO THE EXHAUST POINT IS NOT 100%, THEN EXPLAIN WHERE THE REMAINING EMISSIONS ARE BEING EXHAUSTED TO:

THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE.		
44a) LATITUDE:	b) LONGITUDE:	
45) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
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SUPPLEMENTAL FORM AIR POLLUTION CONTROL EQUIPMENT FLARE (260J)	***FOR AGENCY USE ONLY***
	ID NUMBER: 201-801-AAF
	CONTROL EQUIPMENT #:
	DATE:

DATA AND INFORMATION

1) FLOW DIAGRAM DESIGNATION OF FLARE:

2a) MAXIMUM CAPACITY OF FLARE (SCF/MIN):	b) MAXIMUM CAPACITY OF FLARE (SCF/HR):
1000	

3a) NATURAL GAS FLOW RATE TO FLARE PILOT FLAME (SCFM/MIN):	b) NATURAL GAS FLOW RATE TO FLARE PILOT FLAME (SCF/HR):

4) IS PILOT FLAME EQUIPPED WITH A MONITOR? ☐ YES ☐ NO

IF YES, WHAT TYPE? (CHECK ONE)
☐ THERMOCOUPLE ☐ INFRA-RED ☐ ULTRA VIOLET ☐ CAMERA WITH MONITORING CONTROL ROOM
☐ OTHER, DESCRIBE: _____

5) IS FLARE STEAM ASSISTED? ☐ YES ☐ NO

6) IS FLARE CONSIDERED SMOKELESS? ☐ YES ☐ NO

7a) FLARE TIP DIAMETER (INCHES):	b) TEMPERATURE OF FLARE GAS (DEGREES F°):
	1,500 (typical)

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

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8) INLET EMISSION STREAM PARAMETERS:

	MAX	TYPICAL
PRESSURE (mmHG):		
HEAT CONTENT (BTU/SCF):		
OXYGEN CONTENT:	(%)	(%)
MOISTURE CONTENT:	(%)	(%)
RELATIVE HUMIDITY:	(%)	(%)

ARE HALOGENATED ORGANICS PRESENT? ☐ YES ☐ NO

ARE PARTICULATES PRESENT? ☐ YES ☐ NO

ARE METALS PRESENT? ☐ YES ☐ NO

9a) MAXIMUM RATE DURING EMERGENCY FOR ONE MAJOR PIECE OF EQUIPMENT OR PROCESS UNIT (SCF/MIN):

b) MAXIMUM RATE DURING EMERGENCY FOR ONE MAJOR PIECE OF EQUIPMENT OR PROCESS UNIT (BTU/MIN):

10a) TYPICAL OPERATING RATE (SCF/MIN):	b) TYPICAL OPERATING RATE (BTU/MIN):

11) FLARE OPERATING PARAMETERS:

	DURING MAXIMUM OPERATION OF FEEDING UNIT(S)	DURING TYPICAL OPERATION OF FEEDING UNIT(S)
INLET GAS TEMPERATURE (DEGREES F°):		
INLET GAS FLOW RATE (SCFM):		
EFFICIENCY (VOM REDUCTION):	(%)	(%)
EFFICIENCY (OTHER; SPECIFY REGULATED AIR POLLUTANT _____):	(%)	(%)

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SUPPLEMENTAL FORM AIR POLLUTION CONTROL EQUIPMENT OTHER TYPE OF CONTROL (260K)	***FOR AGENCY USE ONLY***
	ID NUMBER:
	CONTROL EQUIPMENT #:
	DATE:

DATA AND INFORMATION

1) FLOW DIAGRAM DESIGNATION OF CONTROL:

2) GENERIC NAME OF "OTHER" CONTROL EQUIPMENT:

Sludge Dehydration Plant

3) PROVIDE A DESCRIPTION AND SKETCH WITH DIMENSIONS AND FLOW RATES:

Pagel Landfill

8403 Lindenwood Road
Rockford, Illinois 61109
815 874 4806

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

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APPLICATION PAGE _____

4) INLET EMISSION STREAM PARAMETERS:

	MAX	TYPICAL
PRESSURE (mmHG):		
OXYGEN CONTENT:	(%)	(%)
MOISTURE CONTENT:	(%)	(%)
RELATIVE HUMIDITY:	(%)	(%)

5a) ARE HALOGENATED ORGANICS PRESENT?

☐ YES ☒ NO

b) ARE PARTICULATES PRESENT?

☒ YES ☐ NO

c) ARE METALS PRESENT?

☐ YES ☒ NO

6) CONTROL OPERATING PARAMETERS:

	DURING MAXIMUM OPERATION OF FEEDING UNIT(S)	DURING TYPICAL OPERATION OF FEEDING UNIT(S)
INLET GAS TEMPERATURE (DEGREES F°):	700	788
INLET GAS FLOW RATE (SCFM):	909	788
EFFICIENCY (SPECIFY REGULATED AIR POLLUTANT _____):	(%)	(%)
EFFICIENCY (SPECIFY REGULATED AIR POLLUTANT NMOC):	(%) 98+	(%) 98+

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PROCESS EMISSION UNIT DATA AND INFORMATION	***FOR AGENCY USE ONLY***
	ID NUMBER:
	EMISSION POINT #:
	DATE:

SOURCE INFORMATION	
1) SOURCE NAME: Pagel Landfill	
2) DATE FORM PREPARED:	3) SOURCE ID NO. (IF KNOWN): 201-801-AAF

GENERAL INFORMATION	
4) NAME OF EMISSION UNIT: Pagel Landfill	
5) NAME OF PROCESS: Pagel Landfill - generating landfill gas	
6) DESCRIPTION OF PROCESS:	
7) DESCRIPTION OF ITEM OR MATERIAL PRODUCED OR ACTIVITY ACCOMPLISHED:	
8) FLOW DIAGRAM DESIGNATION OF EMISSION UNIT: N/A	
9) MANUFACTURER OF EMISSION UNIT (IF KNOWN): N/A	
10) MODEL NUMBER (IF KNOWN): N/A	11) SERIAL NUMBER (IF KNOWN): N/A
12) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EMISSION UNIT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR):
	b) OPERATION (MONTH/YEAR):
	c) LATEST MODIFICATION (MONTH/YEAR):
13) DESCRIPTION OF MODIFICATION (IF APPLICABLE):	

FOR APPLICANT'S USE
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14) DOES THE EMISSION UNIT HAVE MORE THAN ONE MODE OF OPERATION? ☐ YES ☐ NO

IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE PROCESS EMISSION UNIT FORM 220-CAAPP MUST BE COMPLETED FOR EACH MODE):

15) PROVIDE THE NAME AND DESIGNATION OF ALL AIR POLLUTION CONTROL EQUIPMENT CONTROLLING THIS EMISSION UNIT, IF APPLICABLE (FORM 260-CAAPP AND THE APPROPRIATE 260-CAAPP ADDENDUM FORM MUST BE COMPLETED FOR EACH ITEM OF AIR POLLUTION CONTROL EQUIPMENT):

16) WILL EMISSIONS DURING STARTUP EXCEED EITHER THE ALLOWABLE EMISSION RATE PURSUANT TO A SPECIFIC RULE, OR THE ALLOWABLE EMISSION LIMIT AS ESTABLISHED BY AN EXISTING OR PROPOSED PERMIT CONDITION? ☐ YES ☐ NO

IF YES, COMPLETE AND ATTACH FORM 203-CAAPP, "REQUEST TO OPERATE WITH EXCESS EMISSIONS DURING STARTUP OF EQUIPMENT".

17) PROVIDE ANY LIMITATIONS ON SOURCE OPERATION AFFECTING EMISSIONS OR ANY WORK PRACTICE STANDARDS (E.G., ONLY ONE UNIT IS OPERATED AT A TIME):

OPERATING INFORMATION

18) ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSION RELATED, FROM WHICH THE FOLLOWING OPERATING INFORMATION, MATERIAL USAGE INFORMATION AND FUEL USAGE DATA WERE BASED AND LABEL AS EXHIBIT 220-1. REFER TO SPECIAL NOTES OF FORM 202-CAAPP.

19a) MAXIMUM OPERATING HOURS	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52	
b) TYPICAL OPERATING HOURS	HOURS/DAY:	DAYS/WEEK:	WEEKS/YEAR:	
20) ANNUAL THROUGHPUT	DEC-FEB(%): 25	MAR-MAY(%): 25	JUN-AUG(%): 25	SEP-NOV(%): 25

MATERIAL USAGE INFORMATION

	MAXIMUM RATES		TYPICAL RATES	
21a) RAW MATERIALS	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
N/A				

21b) PRODUCTS	MAXIMUM RATES LBS/HR	MAXIMUM RATES TONS/YEAR	TYPICAL RATES LBS/HR	TYPICAL RATES TONS/YEAR
N/A				

21c) BY-PRODUCT MATERIALS	MAXIMUM RATES LBS/HR	MAXIMUM RATES TONS/YEAR	TYPICAL RATES LBS/HR	TYPICAL RATES TONS/YEAR
N/A				

FUEL USAGE DATA

22a) MAXIMUM FIRING RATE (MILLION BTU/HR):	b) TYPICAL FIRING RATE (MILLION BTU/HR):	c) DESIGN CAPACITY FIRING RATE (MILLION BTU/HR):

d) FUEL TYPE:

☐ NATURAL GAS ☐ FUEL OIL: GRADE NUMBER _____ ☐ COAL ☐ OTHER _____

IF MORE THAN ONE FUEL IS USED, ATTACH AN EXPLANATION AND LABEL AS EXHIBIT 220-2.

e) TYPICAL HEAT CONTENT OF FUEL (BTU/LB, BTU/GAL OR BTU/SCF):	f) TYPICAL SULFUR CONTENT (WT %., NA FOR NATURAL GAS):
1000 BTU/SCF	
g) TYPICAL ASH CONTENT (WT %., NA FOR NATURAL GAS):	h) ANNUAL FUEL USAGE (SPECIFY UNITS, E.G., SCF/YEAR, GAL/YEAR, TON/YEAR):

23) ARE COMBUSTION EMISSIONS DUCTED TO THE SAME STACK OR CONTROL AS PROCESS UNIT EMISSIONS? ☐ YES ☐ NO

IF NO, IDENTIFY THE EXHAUST POINT FOR COMBUSTION EMISSIONS:

APPLICABLE RULES

24) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.204(j)(4), 3.5 LBS/GAL):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

25) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)

26) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)

27) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)

28) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)

29) DOES THE EMISSION UNIT QUALIFY FOR AN EXEMPTION FROM AN OTHERWISE APPLICABLE RULE? ☐ YES ☐ NO

IF YES, THEN LIST BOTH THE RULE FROM WHICH IT IS EXEMPT AND THE RULE WHICH ALLOWS THE EXEMPTION. PROVIDE A DETAILED EXPLANATION JUSTIFYING THE EXEMPTION. INCLUDE DETAILED SUPPORTING DATA AND CALCULATIONS. ATTACH AND LABEL AS EXHIBIT 220-3, OR REFER TO OTHER ATTACHMENT(S) WHICH ADDRESS AND JUSTIFY THIS EXEMPTION.

COMPLIANCE INFORMATION

30) IS THE EMISSION UNIT IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? ☐ YES ☐ NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE -- ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

31) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

32) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

TESTING, MONITORING, RECORDKEEPING AND REPORTING

33a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY

33b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON

c) IS COMPLIANCE OF THE EMISSION UNIT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? ☐ YES ☐ NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND SUBMITTAL TO THE AGENCY UPON REQUEST? ☐ YES ☐ NO

IF NO, EXPLAIN:

34a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

b) WHAT PARAMETER(S) IS(ARE) BEING MONITORED (E.G., VOM EMISSIONS TO ATMOSPHERE)?

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., IN STACK MONITOR 3 FEET FROM EXIT):

34d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? ☐ YES ☐ NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? ☐ YES ☐ NO

IF NO, EXPLAIN:

f) IS EACH MONITOR OPERATED AT ALL TIMES THE ASSOCIATED EMISSION UNIT IS IN OPERATION? ☐ YES ☐ NO

IF NO, EXPLAIN:

35) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 220-4:

TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS

36) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY

(37)EMISSION INFORMATION

REGULATED AIR POLLUTANT		☐ [1]ACTUAL EMISSION RATE ☐ [1]UNCONTROLLED EMISSION RATE					ALLOWABLE BY RULE EMISSION RATE			[2]PERMITTED EMISSION RATE	
		LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[3]OTHER TERMS	[4]DM	[5]RATE (UNITS)	APPLICABLE RULES	TONS PER YEAR (TONS/YR)	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM:						( )				
	TYPICAL:						( )				
LEAD	MAXIMUM:						( )				
	TYPICAL:						( )				
NITROGEN OXIDES (NOx)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER (PART)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM:						( )				
	TYPICAL:						( )				
SULFUR DIOXIDE (SO2)	MAXIMUM:						( )				
	TYPICAL:						( )				
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM:						( )				
	TYPICAL:						( )				
OTHER, SPECIFY: _____	MAXIMUM:						( )				
	TYPICAL:						( )				
EXAMPLE: PARTICULATE MATTER	*MAXIMUM:*	*5.00*	*21.9*	*0.3 GR/DSCF*		*1*	*6.0 (LBS/HR)*	*212.321*	*26.28*	*5.5 LBS/HR*	*22*
	TYPICAL:	*4.00*	*14.4*	*0.24 GR/DSCF*		*4*	*5.5 (LBS/HR)*	*212.321*	*19.80*		

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-5.

[1]CHECK UNCONTROLLED EMISSION RATE BOX IF CONTROL EQUIPMENT IS USED, OTHERWISE CHECK AND PROVIDE THE ACTUAL EMISSION RATE TO ATMOSPHERE, INCLUDING INDOORS. SEE INSTRUCTIONS.
[2]PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
[5]RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

(38) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION

NAME OF HAP EMITTED	[2]CAS NUMBER	☐ [1]ACTUAL EMISSION RATE / ☐ [1]UNCONTROLLED EMISSION RATE	POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[4]DM	[5]RATE OR STANDARD	APPLICABLE RULE
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
EXAMPLE:		MAXIMUM:	*10.0*	*1.2*		*2*	*98% by wt control device*	*CFR 61*
Benzene	*71432*	TYPICAL:	*8.0*	*0.8*		*2*	*leak-tight trucks*	*61.302(b),(d)*

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-6.

[1]PROVIDE UNCONTROLLED EMISSIONS IF CONTROL EQUIPMENT IS USED. OTHERWISE, PROVIDE ACTUAL EMISSIONS TO THE ATMOSPHERE, INCLUDING INDOORS. CHECK BOX TO SPECIFY.
[2]CAS - CHEMICAL ABSTRACT SERVICE NUMBER.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G., PPM, GR/DSCF, ETC.).
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS, 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).
[5]RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION

THIS SECTION SHOULD NOT BE COMPLETED IF EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.

39) FLOW DIAGRAM DESIGNATION OF EXHAUST POINT:

See Figure 2-1

40) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS.

See Figure 1-2, Appendix A, and Appendix B, exhaust is up

41) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):

350 (approximate)

42) DISCHARGE HEIGHT ABOVE GRADE (FT):

34 feet (typical)

43) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):

44) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA. 6.8 feet (approximate)

45) EXIT GAS FLOW RATE (1,000 SCFM) 3,700	a) MAXIMUM (ACFM):	b) TYPICAL (ACFM):
46) EXIT GAS TEMPERATURE 1,500 (typical)	a) MAXIMUM (°F):	b) TYPICAL (°F):

47) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):

48) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:

	NAME	FLOW DIAGRAM DESIGNATION
a)		
b)		
c)		
d)		
e)		

THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE.

49a) LATITUDE:	b) LONGITUDE:	
50) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):

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LISTING OF INSIGNIFICANT ACTIVITIES

FOR AGENCY USE ONLY
ID NUMBER:
PERMIT #:
DATE:

THIS FORM MUST BE COMPLETED FOR ALL ACTIVITIES THAT ARE "INSIGNIFICANT" ACCORDING TO 35 ILL. ADM. CODE, SECTION 201.210 AND 201.211 FOR WHICH DETAILED DATA AND INFORMATION, AS REQUESTED IN OTHER FORMS, IS NOT PROVIDED.

SOURCE INFORMATION

1) SOURCE NAME: Pagel Landfill

2) DATE FORM PREPARED:

3) SOURCE ID NO. (IF KNOWN): 201-801-AAF

INSIGNIFICANT ACTIVITIES

4) ARE ANY ONE OR ALL OF THE FOLLOWING ACTIVITIES, AS IDENTIFIED IN 35 ILL. ADM. CODE 201.210(b), PRESENT AT THE SOURCE? CHECK THE APPROPRIATE BOX. ☒ YES ☐ NO

ACTIVITIES IN 35 ILL. ADM. CODE 201.210(b):

i) AIR CONDITIONING OR VENTILATING EQUIPMENT NOT DESIGNED TO REMOVE AIR CONTAMINANTS GENERATED BY OR RELEASED FROM ASSOCIATED EQUIPMENT;

ii) PHOTOGRAPHIC PROCESS EQUIPMENT BY WHICH AN IMAGE IS REPRODUCED UPON MATERIAL SENSITIZED TO RADIANT ENERGY;

iii) EQUIPMENT USED FOR HYDRAULIC OR HYDROSTATIC TESTING;

X iv) GENERAL VEHICLE MAINTENANCE AND SERVICING ACTIVITIES AT THE SOURCE, OTHER THAN GASOLINE FUEL HANDLING;

v) CAFETERIAS, KITCHENS AND OTHER FACILITIES USED FOR PREPARING FOOD OR BEVERAGES PRIMARILY FOR CONSUMPTION AT THE SOURCE;

vi) EQUIPMENT USING A WATER, WATER AND SOAP OR DETERGENT, OR A SUSPENSION OF ABRASIVES IN WATER FOR PURPOSES OF CLEANING OR FINISHING PROVIDED NO ORGANIC SOLVENT HAS BEEN ADDED TO THE WATER;

X vii) ADMINISTRATIVE ACTIVITIES INCLUDING, BUT NOT LIMITED TO, PAPER SHREDDING, COPYING, PHOTOGRAPHIC ACTIVITIES, AND BLUEPRINTING MACHINES. THIS DOES NOT INCLUDE INCINERATORS;

viii) LAUNDRY DRYERS, EXTRACTORS, AND TUMBLERS PROCESSING CLOTHING, BEDDING, AND OTHER FABRIC ITEMS USED AT THE SOURCE THAT HAVE BEEN CLEANED WITH WATER SOLUTIONS OF BLEACH OR DETERGENTS PROVIDED THAT ANY ORGANIC SOLVENT PRESENT IN SUCH ITEMS BEFORE PROCESSING THAT IS RETAINED FROM CLEAN-UP OPERATIONS SHALL BE ADDRESSED AS PART OF THE VOM EMISSIONS FROM USE OF CLEANING MATERIALS;

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INSIGNIFICANT ACTIVITIES (continued)

	ix) HOUSEKEEPING ACTIVITIES FOR CLEANING PURPOSES, INCLUDING COLLECTING SPILLED AND ACCUMULATED MATERIALS AT THE SOURCE, INCLUDING OPERATION OF FIXED VACUUM CLEANING SYSTEMS SPECIFICALLY FOR SUCH PURPOSES, BUT NOT INCLUDING USE OF CLEANING MATERIALS THAT CONTAIN ORGANIC SOLVENT;
	x) REFRIGERATION SYSTEMS, INCLUDING STORAGE TANKS USED IN REFRIGERATION SYSTEMS, BUT EXCLUDING ANY COMBUSTION EQUIPMENT ASSOCIATED WITH SUCH SYSTEMS;
	xi) BENCH SCALE LABORATORY EQUIPMENT AND LABORATORY EQUIPMENT USED EXCLUSIVELY FOR CHEMICAL AND PHYSICAL ANALYSIS, INCLUDING ASSOCIATED LABORATORY FUME HOODS, VACUUM PRODUCING DEVICES AND CONTROL DEVICES INSTALLED PRIMARILY TO ADDRESS POTENTIAL ACCIDENTAL RELEASES;
X	xii) REST ROOM FACILITIES AND ASSOCIATED CLEANUP OPERATIONS, AND STACKS OR VENTS USED TO PREVENT THE ESCAPE OF SEWER GASES THROUGH PLUMBING TRAPS;
X	xiii) ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION, ON-SITE REPAIR, MAINTENANCE OR DISMANTLEMENT OF BUILDINGS, UTILITY LINES, PIPELINES, WELLS, EXCAVATIONS, EARTHWORKS AND OTHER STRUCTURES THAT DO NOT CONSTITUTE EMISSION UNITS;
X	xiv) STORAGE TANKS OF ORGANIC LIQUIDS WITH A CAPACITY OF LESS THAN 500 GALLONS, PROVIDED THE TANK IS NOT USED FOR STORAGE OF ANY MATERIAL LISTED AS A HAZARDOUS AIR POLLUTANT PURSUANT TO SECTION 112(b) OF THE CLEAN AIR ACT;
X	xv) PIPING AND STORAGE SYSTEMS FOR NATURAL GAS, PROPANE, AND LIQUEFIED PETROLEUM GAS;
X	xvi) WATER TREATMENT OR STORAGE SYSTEMS AS FOLLOWS: (A) SYSTEMS FOR POTABLE WATER OR BOILER FEEDWATER, (B) SYSTEMS, INCLUDING COOLING TOWERS, FOR PROCESS WATER PROVIDED THAT SUCH WATER HAS NOT BEEN IN DIRECT OR INDIRECT CONTACT WITH PROCESS STREAMS THAT CONTAIN VOLATILE ORGANIC MATERIAL OR MATERIALS LISTED AS HAZARDOUS AIR POLLUTANTS PURSUANT TO SECTION 112(b) OF THE CLEAN AIR ACT;
X	xvii) LAWN CARE, LANDSCAPE MAINTENANCE, AND GROUNDSKEEPING ACTIVITIES;
	xviii) CONTAINERS, RESERVOIRS, OR TANKS USED EXCLUSIVELY IN DIPPING OPERATIONS TO COAT OBJECTS WITH OILS, WAXES, OR GREASES, PROVIDED NO ORGANIC SOLVENT HAS BEEN MIXED WITH SUCH MATERIALS;
	xix) COLD CLEANING DEGREASERS THAT ARE NOT IN-LINE CLEANING MACHINES, WHERE THE VAPOR PRESSURE OF THE SOLVENTS USED NEVER EXCEED 2kPa MEASURED AT 38C OR 0.7kPa AT 20C;
	xx) MANUALLY OPERATED EQUIPMENT USED FOR BUFFING, POLISHING, CARVING, CUTTING, DRILLING, MACHINING, ROUTING, SANDING, SAWING, SCARFING, SURFACE GRINDING, OR TURNING;
	xxi) USE OF CONSUMER PRODUCTS, INCLUDING HAZARDOUS SUBSTANCES AS THAT TERM IS DEFINED IN THE FEDERAL HAZARDOUS SUBSTANCES ACT, WHERE THE PRODUCT IS USED AT A SOURCE IN THE SAME MANNER AS NORMAL CONSUMER USE;
	xxii) ACTIVITIES DIRECTLY USED IN THE DIAGNOSIS AND TREATMENT OF DISEASE, INJURY OR OTHER MEDICAL CONDITION;
	xxiii) FIREFIGHTING ACTIVITIES AND TRAINING IN PREPARATION FOR FIGHTING FIRES CONDUCTED AT THE SOURCE;
X	xxiv) INTERNAL COMBUSTION ENGINE OR BOILER (INCLUDING THE FUEL SYSTEM) OF MOTOR VEHICLES, LOCOMOTIVES, AIR CRAFT, WATERCRAFT, LIFTTRUCKS, AND OTHER VEHICLES POWERED BY NONROAD ENGINES;
X	xxv) ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION, REPAIR OR MAINTENANCE OF ROADS OR OTHER PAVED OR OPEN AREAS, INCLUDING OPERATION OF STREET SWEEPERS, VACUUM TRUCKS, SPRAY TRUCKS, AND OTHER VEHICLES RELATED TO THE CONTROL OF FUGITIVE EMISSIONS OF SUCH ROADS OR OTHER AREAS;
X	xxvi) STORAGE AND HANDLING OF DRUMS OR OTHER TRANSPORTABLE CONTAINERS WHERE THE CONTAINERS ARE SEALED DURING STORAGE AND HANDLING;

INSIGNIFICANT ACTIVITIES (continued)

xxvii) INDIVIDUAL POINTS OF EMISSION OR ACTIVITIES AS FOLLOWS: (A) INDIVIDUAL FLANGES, VALVES, PUMP SEALS, PRESSURE RELIEF VALVES AND OTHER INDIVIDUAL COMPONENTS THAT HAVE THE POTENTIAL FOR LEAKS, (B) INDIVIDUAL SAMPLING POINTS, ANALYZERS, AND PROCESS INSTRUMENTATION, WHOSE OPERATION MAY RESULT IN EMISSIONS, (C) INDIVIDUAL FEATURES OF AN EMISSION UNIT SUCH AS EACH BURNER AND SOOTBLOWERS IN A BOILER OR EACH USE OF CLEANING MATERIALS ON A COATING OR PRINTING LINE, (D) INDIVIDUAL EQUIPMENT THAT IS TRANSPORTABLE OR ACTIVITIES WITHIN A FACILITY ESTABLISHED FOR TESTING UNITS PRIOR TO SALE OR DISTRIBUTION OR FOR PURPOSES OF RESEARCH, AND (E) INDIVIDUAL EQUIPMENT OR ACTIVITIES WITHIN A PILOT PLANT FACILITY THAT IS USED FOR RESEARCH OR TRAINING;

xxviii) ACTIVITIES AT A SOURCE ASSOCIATED WITH THE MODIFICATION ONLY OR CONSTRUCTION ONLY OF A FACILITY, AN EMISSION UNIT OR OTHER EQUIPMENT AT THE SOURCE;

X xxix) ACTIVITIES AT A SOURCE ASSOCIATED WITH THE MAINTENANCE, REPAIR, OR DISMANTLEMENT OF AN EMISSION UNIT OR OTHER EQUIPMENT INSTALLED AT THE SOURCE, NOT INCLUDING THE SHUTDOWN OF THE UNIT OR EQUIPMENT, INCLUDING PREPARATION FOR MAINTENANCE, REPAIR OR DISMANTLEMENT, AND PREPARATION FOR SUBSEQUENT STARTUP, INCLUDING PREPARATION OF A SHUTDOWN VESSEL FOR ENTRY, REPLACEMENT OF INSULATION, WELDING AND CUTTING, AND STEAM PURGING OF A VESSEL PRIOR TO STARTUP.

5) ARE ANY EMISSION UNITS AT THE SOURCE CONSIDERED INSIGNIFICANT ACTIVITIES BECAUSE THEY FALL UNDER ONE OF THE ACTIVITIES OR EMISSION LEVELS LISTED IN 35 ILL. ADM. CODE 201.210(a)(1) THROUGH (18)? IF YES, IDENTIFY THE EMISSION UNITS IN THE "LIST OF INSIGNIFICANT ACTIVITIES PURSUANT TO 201.210(a)(1) THROUGH (18)" AND PROVIDE THE REQUESTED INFORMATION. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 297-1.

ACTIVITIES AND EMISSION LEVELS IN 35 ILL. ADM. CODE 201.210(a)

i)	ANY EMISSION UNIT DETERMINED TO BE AN INSIGNIFICANT ACTIVITY BY THE AGENCY PURSUANT TO 35 ILL. ADM. CODE 201.211 (SEE ITEM #6);	☒ YES	☐ NO
ii)	EMISSION UNITS WITH EMISSIONS THAT NEVER EXCEED 0.1 LBS/HR OF ANY REGULATED AIR POLLUTANT IN THE ABSENCE OF AIR POLLUTION CONTROL EQUIPMENT AND THAT DO NOT EMIT ANY AIR POLLUTANT LISTED AS HAZARDOUS PURSUANT TO SECTION 112(b) OF THE CLEAN AIR ACT;	☒ YES	☐ NO
iii)	EMISSION UNITS WITH EMISSIONS THAT NEVER EXCEED 0.44 TONS/YR OF ANY REGULATED AIR POLLUTANT IN THE ABSENCE OF AIR POLLUTION CONTROL EQUIPMENT AND THAT DO NOT EMIT ANY AIR POLLUTANT LISTED AS HAZARDOUS PURSUANT TO SECTION 112(b) OF THE CLEAN AIR ACT;	☒ YES	☐ NO
iv)	DIRECT COMBUSTION UNITS DESIGNED AND USED FOR COMFORT HEATING PURPOSES AND FUEL COMBUSTION EMISSION UNITS AS FOLLOWS: (A) UNITS WITH A RATED HEAT INPUT CAPACITY OF LESS THAN 2.5 MMBTU/HR THAT FIRE ONLY NATURAL GAS, PROPANE OR LIQUEFIED PETROLEUM GAS, (B) UNITS WITH A RATED HEAT INPUT CAPACITY OF LESS THAN 1.0 MMBTU/HR THAT FIRE ONLY OIL OR OIL IN COMBINATION WITH NATURAL GAS, PROPANE OR LIQUEFIED PETROLEUM GAS, AND (C) UNITS WITH A RATED HEAT INPUT CAPACITY OF LESS THAN 200,000 BTU/HR WHICH NEVER BURN REFUSE, OR TREATED OR CHEMICALLY CONTAMINATED WOOD;	☒ YES	☐ NO
v)	EXTRUDERS USED FOR THE EXTRUSION OF METALS, MINERALS, PLASTICS, RUBBER, OR WOOD, EXCLUDING EXTRUDERS USED IN THE MANUFACTURE OF POLYMERS, PROVIDED THAT VOLATILE ORGANIC MATERIALS OR CLASS I OR II SUBSTANCES SUBJECT TO THE REQUIREMENTS OF TITLE VI OF THE CLEAN AIR ACT ARE NOT USED AS FOAMING AGENTS OR RELEASE AGENTS OR WERE NOT USED AS FOAMING AGENTS IN THE CASE OF EXTRUDERS PROCESSING SCRAP MATERIAL;	☐ YES	☒ NO
vi)	FURNACES USED FOR MELTING METALS OTHER THAN BERYLLIUM WITH A BRIM FULL CAPACITY OF LESS THAN 450 CUBIC INCHES BY VOLUME;	☐ YES	☒ NO
vii)	EQUIPMENT USED FOR THE MELTING OR APPLICATION OF LESS THAN 50,000 LBS/YR OF WAX TO WHICH NO ORGANIC SOLVENT HAS BEEN ADDED;	☐ YES	☒ NO

INSIGHIFICANT ACTIVITIES (continued)

viii)	EQUIPMENT USED FOR FILLING DRUMS, PAILS OR OTHER PACKAGING CONTAINERS, EXCLUDING AEROSOL CANS, WITH SOAPS, DETERGENTS, SURFACTANTS, LUBRICATING OILS, WAXES, VEGETABLE OILS, GREASES, ANIMAL FATS, GLYCERIN, SWEETENERS, CORN SYRUP, AQUEOUS SALT SOLUTIONS, OR AQUEOUS CAUSTIC SOLUTIONS;	☐ YES	☒ NO
ix)	EQUIPMENT USED FOR THE MIXING AND BLENDING OF MATERIALS AT AMBIENT TEMPERATURE TO MAKE WATER BASED ADHESIVES PROVIDED EACH MATERIAL CONTAINS LESS THAN 5% ORGANIC SOLVENT BY WEIGHT;	☐ YES	☒ NO
x)	STORAGE TANKS OF ORGANIC LIQUIDS WITH A CAPACITY OF LESS THAN 10,000 GALLONS AND AN ANNUAL THROUGHPUT OF LESS THAN 100,000 GALLONS PROVIDED THE TANK IS NOT USED FOR THE STORAGE OF GASOLINE OR ANY LISTED HAZARDOUS AIR POLLUTANT PURSUANT TO SECTION 112(b) OF THE CLEAN AIR ACT;	☒ YES	☐ NO
xi)	STORAGE TANKS OF VIRGIN OR REREFINED DISTILLATE OIL, HYDROCARBON CONDENSATE FROM NATURAL GAS PIPELINE OR STORAGE SYSTEMS, LUBRICATING OIL, OR RESIDUAL FUEL OILS;	☒ YES	☐ NO
xii)	DIE CASTING MACHINES WHERE A METAL OR PLASTIC IS FORMED UNDER PRESSURE IN A DIE;	☐ YES	☒ NO
xiii)	COATING OPERATIONS (EXCLUDING POWDER, ARCHITECTURAL AND INDUSTRIAL MAINTENANCE COATING) WITH AGGREGATE VOM USAGE THAT NEVER EXCEEDS 15 LBS/DAY FROM ALL COATING LINES AT THE SOURCE, INCLUDING VOM FROM COATING, DILUTENTS, AND CLEANING MATERIALS;	☐ YES	☒ NO
xiv)	PRINTING OPERATIONS WITH AGGREGATE ORGANIC SOLVENT USAGE THAT NEVER EXCEEDS 750 GALLONS PER YEAR FROM ALL PRINTING LINES AT THE SOURCE, INCLUDING ORGANIC SOLVENT FROM INKS, DILUTENTS, FOUNTAIN SOLUTIONS, AND CLEANING MATERIALS;	☐ YES	☒ NO
xv)	GAS TURBINES AND STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES OF LESS THAN 112 KW (150 HORSEPOWER) POWER OUTPUT;	☐ YES	☒ NO
xvi)	GAS TURBINES AND STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES OF BETWEEN 112 KW AND 1,1118 KW (150 AND 1,500 HORSEPOWER) POWER OUTPUT THAT ARE EMERGENCY OR STANDBY UNITS;	☐ YES	☒ NO
xvii)	STORAGE TANKS OF ANY SIZE CONTAINING EXCLUSIVELY SOAPS, DETERGENTS, SURFACTANTS, GLYCERIN, WAXES, VEGETABLE OILS, GREASES, ANIMAL FATS, SWEETENERS, CORN SYRUP, AQUEOUS SALT SOLUTIONS, OR AQUEOUS CAUSTIC SOLUTIONS PROVIDED AN ORGANIC SOLVENT HAS NOT BEEN MIXED WITH SUCH MATERIALS;	☐ YES	☒ NO
xviii)	LOADING AND UNLOADING SYSTEMS FOR RAILCARS, TANK TRUCKS, OR WATERCRAFT THAT HANDLE ONLY THE FOLLOWING LIQUID MATERIALS PROVIDED AN ORGANIC SOLVENT HAS NOT BEEN MIXED WITH SUCH MATERIALS: SOAPS, DETERGENTS, SURFACTANTS, LUBRICATING OILS, WAXES, GLYCERIN, VEGETABLE OILS, GREASES, ANIMAL FATS, SWEETENER, CORN SYRUP, AQUEOUS SALT SOLUTIONS, OR AQUEOUS CAUSTIC SOLUTIONS.	☐ YES	☒ NO
6)	ARE ANY EMISSION UNITS AT THE SOURCE PROPOSED TO BE CONSIDERED INSIGNIFICANT ACTIVITIES THAT MEET THE CRITERIA LISTED IN 35 ILL. ADM. CODE 201.211(a)? IF YES, LIST THE EMISSION UNITS IN THE "LIST OF ACTIVITIES FOR WHICH STATUS AS AN INSIGNIFICANT ACTIVITIES IS PROPOSED PURSUANT TO 201.211(a)" AND PROVIDE THE REQUESTED INFORMATION. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 297-2.	☐ YES	☒ NO

CRITERIA IN 35 ILL. ADM. CODE 201.211(a)

i) THE EMISSION UNIT WOULD NOT EMIT MORE THAN 1.0 LBS/HR OF ANY REGULATED AIR POLLUTANT NOT LISTED AS HAZARDOUS PURSUANT TO SECTION 112(b) OF THE CLEAN AIR ACT IN THE ABSENCE OF AIR POLLUTION CONTROL EQUIPMENT;

ii) THE EMISSION UNIT WOULD NOT EMIT MORE THA N 0.1 LB/HR OF ANY REGULATED AIR POLLUTANT LISTED AS HAZARDOUS PURSUANT TO SECTION 112 (b) OF THE CLEAN AIR ACT IN THE ABSENCE OF AIR POLLUTION CONTROL EQUIPMENT; AND

iii) THE EMISSION UNIT IS NOT A PROCESS UNIT.

LIST OF INSIGNIFICANT ACTIVITIES PURSUANT TO 201.210 (a)(1) THROUGH (18)

EMISSION UNIT AND DESIGNATION	# OF UNITS	DESCRIPTION OF UNIT INCLUDING ANY CONTROL	BASIS FOR INSIGNIFICANCE SECTION 201.210(a)___	[1]BASIS FOR DETERMINATION OF EMISSIONS

[1]IF CONSIDERED INSIGNIFICANT BASED ON EMISSION LEVEL, THE DETERMINATION METHOD OF EMISSION MUST BE PROVIDED (E.G., 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)).

LIST OF ACTIVITIES FOR WHICH STATUS AS AN INSIGNIFICANT ACTIVITIES IS PROPOSED PURSUANT TO 201.211 (a)

EMISSION UNIT AND DESIGNATION	[1]IU	DESCRIPTION OF UNIT INCLUDING ANY CONTROL	OPERATING HOURS: HRS PER DAY / DAY PER WEEK / WEEK PER YEAR; [2]DISCUSSION:	EMISSIONS: POLLUTANT / LB PER HOUR / TON PER YEAR; [3]DETERMINATION METHOD:	OTHER SUPPORTING INFORMATION

[1]IU - TOTAL NUMBER OF UNITS (EMISSION RATES SHOULD BE PROVIDED ON A PER UNIT BASIS).
[2]DISCUSSION - PROVIDE AN EXPLANATION OF OPERATING HOURS (E.G., THE UNIT IS ON EMERGENCY STANDBY - THEREFORE IT ONLY OPERATES ONE DAY PER MONTH.)
[3]DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: _____
Date: ____ / ____ / ____
Page _____ of _____
Source Designation:
_____

FUGITIVE EMISSIONS DATA AND INFORMATION	***FOR AGENCY USE ONLY***
	ID NUMBER:
	EMISSION POINT #:
	DATE:

THIS FORM MAY BE COMPLETED FOR FUGITIVE EMISSION ACTIVITIES RATHER THAN COMPLETING AN EMISSION UNIT OR STAND ALONE FORM. FUGITIVE EMISSIONS ARE DEFINED AS THOSE EMISSIONS WHICH COULD NOT REASONABLY PASS THROUGH A STACK, CHIMNEY, VENT OR OTHER FUNCTIONALLY EQUIVALENT OPENING. NOTE THAT UNCAPTURED PROCESS EMISSION UNIT EMISSIONS ARE TYPICALLY NOT CONSIDERED FUGITIVE AND MUST BE ACCOUNTED FOR ON THE APPROPRIATE EMISSION UNIT OR STAND ALONE FORM. ANY EMISSIONS AT THE SOURCE NOT PREVIOUSLY ACCOUNTED FOR ON AN EMISSION UNIT OR STAND ALONE FORM MUST BE ACCOUNTED FOR ON THIS FORM.

SOME EXAMPLES OF EMISSIONS WHICH ARE TYPICALLY CONSIDERED FUGITIVE ARE;

- ROAD DUST EMISSIONS (PAVED ROADS, UNPAVED ROADS, AND LOTS)
- STORAGE PILE EMISSIONS (WIND EROSION, VEHICLE DUMP AND LOAD)
- LOADING/UNLOADING OPERATION EMISSION
- EMISSIONS FROM MATERIAL BEING TRANSPORTED IN A VEHICLE
- EMISSIONS OCCURRING FROM THE UNLOADING AND TRANSPORTING OF MATERIALS COLLECTED BY POLLUTION CONTROL EQUIPMENT
- EQUIPMENT LEAKS (E.G., LEAKS FROM PUMPS, COMPRESSORS, IN-LINE PROCESS VALVES, PRESSURE RELIEF DEVICES, OPEN-ENDED VALVES, SAMPLING CONNECTIONS, FLANGES, AGITATORS, COOLING TOWERS, ETC.)
- GENERAL CLEAN-UP VOM EMISSIONS

NOTE THAT TOTAL EMISSIONS FROM THE SOURCE (TS) ARE EQUAL TO SOURCE-WIDE TOTAL EMISSION UNIT EMISSIONS (PT) PLUS TOTAL FUGITIVE EMISSIONS (FT), E.G., TS = PT + FT.

SOURCE INFORMATION	
1) SOURCE NAME: Pagel Landfill	
2) DATE FORM PREPARED:	3) SOURCE ID NO. (IF KNOWN): 201-801-AAF

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

FOR APPLICANT'S USE
_____

APPLICATION PAGE _____

GENERAL INFORMATION

4) PROVIDE THE FOLLOWING INFORMATION FOR THE FUGITIVE EMISSION POINTS AT THE SOURCE INCLUDED IN THIS APPLICATION. SIMILAR POINTS MAY BE GROUPED TOGETHER.

NOTE: ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, FROM WHICH THE ABOVE EMISSIONS, WERE BASED AND LABEL AS EXHIBIT 391-1. IF THE ABOVE SPACE WAS NOT ADEQUATE , LIST ALL OTHER FUGITIVE POINTS AND INCLUDE THE REQUIRED INFORMATION ON THIS ATTACHMENT.

FOR PAVED AND UNPAVED ROADS, INCLUDE ROAD MILES (E.G., 6 MILES OF UNPAVED ROADS); FOR STORAGE PILES, INDICATE THE MATERIAL BEING STORED (E.G., 20 LIMESTONE STORAGE PILES); FOR EQUIPMENT LEAK POINTS, GROUP SIMILAR POINTS TOGETHER (E.G., 15 ORGANIC LIQUID PUMPS); FOR TRANSFER POINTS, IDENTIFY THE ORIGIN AND DESTINATION OF TRANSFER AND THE MATERIAL BEING TRANSFERRED (E.G., 5 BELT TO BIN TRANSFERS OF CORN).

FUGITIVE POINT(S)	REGULATED AIR POLLUTANT(S)	UNCONTROLLED ANNUAL EMISSIONS (TONS/YR)	
		MAXIMUM	TYPICAL

5) ATTACH A DIAGRAM OF THE SOURCE THAT INDICATES THE LOCATION OF ALL FUGITIVE EMISSION POINTS. A SKETCH DRAWING WITH THE PROPER NOTATIONS IS SUFFICIENT. ALTERNATIVELY, THE REQUIRED INFORMATION MAY BE PLACED ON A COPY OF AN EXISTING PLAN OR MAP SUBMITTED WITH THIS APPLICATION (E.G., PLOT PLAN/MAP). ALSO INDICATE ON THIS DIAGRAM THE LOCATION OF ANY AMBIENT AIR MONITORING STATIONS. LABEL THIS DIAGRAM 391-2. NOTE: EQUIPMENT LEAK FUGITIVE EMISSION POINTS NEED NOT BE SHOWN ON THIS DIAGRAM.

APPLICABLE RULES

6) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATIONS(S) WHICH ARE APPLICABLE TO FUGITIVE EMISSIONS AT THE SOURCE (E.G., ROAD SEGMENT F, PM-10, IAC 212.316(d), OPACITY < OR = 10% AT 4 FT):

FUGITIVE POINTS(S)	REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

7) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE:

FUGITIVE POINTS(S)	REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS 391-3.

APPLICABLE RULES (CON'T)

8) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE:

FUGITIVE POINTS(S)	REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

9) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE:

FUGITIVE POINTS(S)	REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

10) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE:

FUGITIVE POINTS(S)	REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS 391-3.

COMPLIANCE INFORMATION

11) IS EACH FUGITIVE POINT IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? ☒ YES ☐ NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE -- ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

12) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

13) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

See Compliance Monitoring & Response Plan

TESTING, MONITORING, RECORDKEEPING AND REPORTING

14a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	FUGITIVE POINT	METHOD OF MEASUREMENT	FREQUENCY

b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON

c) IS COMPLIANCE OF THE EMISSION UNIT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? ☒ YES ☐ NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND/OR SUBMITTAL TO THE AGENCY UPON REQUEST? ☒ YES ☐ NO

IF NO, EXPLAIN:

15a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

b) WHAT PARAMETER(S) IS(ARE) BEING MONITORED?

c) DESCRIBE THE LOCATION OF EACH MONITOR AND/OR MONITORING PROCEDURES:

d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? ☐ YES ☐ NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? ☐ YES ☐ NO

IF NO, EXPLAIN:

f) IS EACH MONITOR OPERATED AT ALL TIMES THAT FUGITIVE EMISSIONS MAY OCCUR? ☐ YES ☐ NO

IF NO, EXPLAIN:

16) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 391-4:

FUGITIVE POINT(S)	TEST DATE	TEST METHOD	TESTING FIRM	OPERATING CONDITIONS	SUMMARY OF RESULTS

17) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

FUGITIVE POINT(S)	REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY

FUGITIVE DUST (complete if applicable)

18a) ARE OPACITY READINGS REQUIRED TO BE TAKEN? ☐ YES ☐ NO

IF YES, SPECIFY THE RELEVANT FUGITIVE POINT(S):

i) _____

ii) _____

iii) _____

b) SPECIFY THE FREQUENCY OF OPACITY READINGS:

c) IS USEPA METHOD 9 USED TO READ ALL VISIBLE EMISSIONS? ☐ YES ☒ NO

IF NO, EXPLAIN AND SPECIFY THE METHOD USED:

19) IS AN OPERATING PROGRAM FOR FUGITIVE PARTICULATE MATTER AND/OR PM10 CONTROL REQUIRED PURSUANT TO 35 ILL. ADM. CODE 212.309? ☒ YES ☐ NO

IF YES, HAS SUCH A PROGRAM PREVIOUSLY BEEN SUBMITTED TO THE AGENCY? ☐ YES ☐ NO

IF SUCH A PROGRAM HAS NOT BEEN SUBMITTED, IT SHOULD BE ATTACHED TO THIS FORM UPON SUBMITTAL AND LABELED AS 391-5.

20) IS THE SOURCE IN COMPLIANCE WITH 35 ILL. ADM. CODE 212.301 WHICH STATES THAT NO EMISSIONS SHALL BE VISIBLE BEYOND THE PROPERTY LINE OF THE SOURCE? ☒ YES ☐ NO

IF NO, EXPLAIN:

FUGITIVE VOM FROM EQUIPMENT LEAKS (complete if applicable)

21) INDICATE WHICH OF THE FOLLOWING METHODS WAS USED TO ESTIMATE FUGITIVE EMISSIONS OF VOM FROM EQUIPMENT LEAKS:

☐ AVERAGE EMISSION FACTOR ☐ LEAK/NO LEAK EMISSION FACTOR ☒ STRATIFIED EMISSION FACTOR ☐ LEAK RATE/SCREENING VALUE CORRELATION

☐ OTHER; (SPECIFY):

_____

ATTACH A COPY OF THE FINAL REPORT FOR ANY OF THE ABOVE TESTS THAT HAVE BEEN PERFORMED. THIS REPORT SHOULD SUMMARIZE THE TEST PROCEDURES AND RESULTS. LABEL AS 391-6.

22) IS THERE AN ACTIVE INSPECTION AND MONITORING PROGRAM OF EQUIPMENT LEAKS? ☒ YES ☐ NO

IF YES, PROVIDE A DESCRIPTION OF SUCH PROGRAM OR ATTACH THE INSPECTION PROGRAM TO THIS FORM AND LABEL AS 391-7:

See Compliance Monitoring & Response Plan

FUGITIVE VOM FROM CLEANUP OPERATIONS (complete if applicable)

23) COMPLETE THE FOLLOWING FOR EACH VOM CONTAINING MATERIAL USED FOR CLEANUP FOR WHICH THE EMISSIONS ARE FUGITIVE AND HAVE NOT BEEN ACCOUNTED FOR ELSEWHERE IN THIS APPLICATION:

	GENERIC NAME OF CLEANUP MATERIAL	DENSITY (LB/GAL)	VOM CONTENT (WEIGHT %)	ANNUAL USAGE (GAL/YEAR) MAX	ANNUAL USAGE (GAL/YEAR) TYPICAL
a)					
b)					
c)					

24) EXPLAIN THE MEANS BY WHICH THESE MATERIALS ARE USED AND WHAT EQUIPMENT OR ITEMS ARE BEING CLEANED:

25a) ARE ALL VOM USED IN CLEANUP OPERATIONS CONSIDERED TO BE EMITTED? ☒ YES ☐ NO

IF NO, EXPLAIN:

b) IF APPLICABLE, COMPLETE ITEMS i, ii, AND iii BELOW:

i) PROVIDE THE MAXIMUM AND TYPICAL AMOUNT OF VOM RECLAIMED AND/OR SHIPPED OFF-SITE AND HENCE, NOT EMITTED:

	(GAL/YR)	(TONS/YR)
MAX		
TYP		

ii) EXPLAIN THE MEANS BY WHICH VOM IS COLLECTED FOR RECLAMATION AND/OR DISPOSAL:

iii) EXPLAIN THE MEANS BY WHICH THE AMOUNT OF VOM COLLECTED IS MEASURED OR DETERMINED:

FUGITIVE CONTROL

26) COMPLETE THE FOLLOWING, INCLUDING THE MINIMUM AND TYPICAL REDUCTION EFFICIENCY FOR EACH CONTROL MEASURE UTILIZED:

	CONTROL MEASURES	REGULATED AIR POLLUTANT	FUGITIVE POINT(S) CONTROLLED	REDUCTION EFF.(%) MIN	REDUCTION EFF.(%) TYP	FREQUENCY OF CONTROL APPLICATION
a)						
b)						
c)						
d)						
e)						

NOTE: IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS 391-8.

27) PROVIDE A DESCRIPTION OF EACH OF THE CONTROL MEASURES INDICATED IN ITEM 32. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS 391-9.

	CONTROL MEASURE(S)	DESCRIPTION
a)		
b)		

27) **(CONTINUED)** PROVIDE A DESCRIPTION OF EACH OF THE CONTROL MEASURES INDICATED IN ITEM 26. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS 391-9. .

	CONTROL MEASURE(S)	DESCRIPTION
c)		
d)		
e)		
f)		
g)		
h)		

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: _____
Date: ____ / ____ / ____
Page _____ of _____
Source Designation:
_____

HAZARDOUS AIR POLLUTANT (HAP) EMISSION SUMMARY

FOR AGENCY USE ONLY
ID NUMBER:
PERMIT #:
DATE:

SOURCE INFORMATION

1) SOURCE NAME: Pagel Landfill

2) DATE FORM PREPARED: / /

3) SOURCE ID NO. (IF KNOWN): 201-801-AAF

HAZARDOUS AIR POLLUTANT EMISSIONS

4) DOES ANY EMISSION UNIT AT THE SOURCE EMIT A HAZARDOUS AIR POLLUTANT? (IF NO, THEN THE REMAINDER OF THIS FORM NEED NOT BE COMPLETED) ☒ YES ☐ NO

5a) DOES THE SOURCE HAVE THE POTENTIAL TO EMIT, IN THE AGGREGATE,:

i) 10 TONS PER YEAR OR MORE OF ANY INDIVIDUAL HAZARDOUS AIR POLLUTANT; ☐ YES ☒ NO

ii) 25 TONS PER YEAR OR MORE OF ANY COMBINATION OF HAZARDOUS AIR POLLUTANTS; ☐ YES ☒ NO

iii) SUCH LESSER QUANTITY AS ESTABLISHED BY RULE WHICH CLASSIFIES THE SOURCE AS MAJOR FOR HAZARDOUS AIR POLLUTANTS; ☐ YES ☒ NO

iv) EMISSIONS OF HAZARDOUS AIR POLLUTANTS WHICH EQUAL OR EXCEED A POLLUTANT SPECIFIC CAAPP APPLICABILITY LEVEL AS ESTABLISHED BY USEPA RULE SUCH THAT THE SOURCE IS REQUIRED TO OBTAIN A CAAPP PERMIT SOLELY FOR THIS REASON (i.e., HAP EMISSIONS BELOW THE CAAPP APPLICABILITY THRESHOLDS SPECIFIED IN ITEMS (i), (ii) &(iii) ABOVE, BUT STILL REQUIRED TO OBTAIN A CAAPP PERMIT PURSUANT TO A REGULATORY REQUIREMENT, e.g., NESHAP)? ☐ YES ☒ NO

b) IF ANSWERED YES TO ANY OF THE ABOVE, IDENTIFY THE HAP(S) FOR WHICH THE SOURCE IS CONSIDERED MAJOR OR REQUIRED TO OBTAIN A CAAPP PERMIT:

See Appendix A

HAZARDOUS AIR POLLUTANT EMISSIONS TABLE

6) COMPLETE THE FOLLOWING TABLE FOR ALL HAPs WHICH ARE REGULATED AIR POLLUTANTS. THIS TABLE MUST INCLUDE EMISSIONS OF HAPS AT ACTIVITIES PROPOSED TO BE INSIGNIFICANT PURSUANT TO 35 IL. ADM. CODE 201.211. NOTE THAT AN APPLICANT MAY PRESUME THAT AN EMISSION UNIT DOES NOT EMIT A HAP IF IT MEETS THE REQUIREMENTS OF 35 IL. ADM. CODE 201.209.

FOR APPLICANT'S USE
_____

APPLICATION PAGE _____

(6) HAZARDOUS AIR POLLUTANT EMISSIONS

COMPLETE THE FOLLOWING TABLE FOR ALL HAPS WHICH ARE REGULATED AIR POLLUTANTS. THIS TABLE MUST INCLUDE EMISSIONS OF HAPS AT ACTIVITIES PROPOSED TO BE INSIGNIFICANT PURSUANT TO 35 IL. ADM. CODE 201.211. NOTE THAT AN APPLICANT MAY PRESUME THAT AN EMISSION UNIT DOES NOT EMIT A HAP IF IT MEETS THE REQUIREMENTS OF 35 IL. ADM. CODE 201.209.

NAME OF HAP EMITTED:	[1]CAS NUMBER	EMISSION UNIT DESIGNATION.	MAXIMUM EMISSIONS (TONS/YR)	TYPICAL EMISSIONS (TONS//YR)	POTENTIAL EMISSIONS (TONS/YR)	OTHER TERMS[2]	APPLICABLE RULE	APPLICABILITY LEVEL (UNITS)

See Appendix A

[1]CAS - CHEMICAL ABSTRACT SERVICE
[2]PROVIDE OTHER TERMS AS NECESSARY TO ESTABLISH APPLICABILITY OR COMPLIANCE WITH REQUIREMENTS.